2

A TREATISE ON DILUENTS,

AND

AN ENQUIRY INTO THE

DISEASES OF THE FLUIDS

OF THE HUMAN BODY,

TO ASCERTAIN THE OPERATION OF DILUENTS UPON THEM.

WITH

DILUTION PRACTICALLY APPLIED
TO PARTICULAR DISEASES:

WHEREIN THE

EFFICACY OF MINERAL WATERS IS CONSIDERED.

TO WHICH ARE PREFIXED,

OBSERVATIONS UPON COMMON WATER,

AS FAR AS IT RESPECTS THE SUBJECT OF ATTENUANTS.

BY THOMAS JAMESON,

SURGEON OF HIS MAJESTY'S NAVY.

Αριςτον μὲν υδωρ.

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M.DCC.LXXXVIII.

TO

Sir GEORGE BAKER, Bart.

PHYSICIAN TO THEIR MAJESTIES,

PRESIDENT OF THE COLLEGE OF PHYSICIANS,

AND

FELLOW OF THE ROYAL SOCIETY.

SIR,

THE Learning and Labours which have ſo juſtly entitled you to the exalted Rank and Eminence you hold in the Profeſſion of Phyſick, have alſo enabled you to protect the feeble in Science; and as it is the diſtinguiſhing Quality of a great Mind, to approve of well-meant Efforts, and to encourage

every

every Aſſiſtance to Knowledge, I am furniſhed with a ſufficient Apology for wiſhing to ſtamp a Value upon theſe Sheets, by prefixing your name to them, and for ſubſcribing myſelf, with the greateſt reſpect,

SIR,

Your moſt obedient
and obliged
humble Servant,

THOs. JAMESON.

Hart-Street, Bloomſbury,
Nov. 1ſt, 1788.

INTRODUCTION.

PART of the materials of the preſent treatiſe I read before a medical ſociety ſome years ago: from its meeting with the approbation of the ſociety at that time, I am now encouraged to dilate and publiſh it, in hopes that it may be worthy the attention of the publick, both in reſpect to the importance and the novelty of the ſubject.—The doctrine of dilution has been exceedingly neglected by medical authors, and almoſt entirely overlooked by thoſe who treat on therapeutics, from conſidering drinks more as a part of diet, than medicine; but even in the view of aliment, drinks ſhould not be diſregarded, ſince they may be made ſufficient of themſelves,

ſelves, in many caſes, to cure diſeaſes; and will be a more pleaſant remedy, and have a more laſting effect than any other.

In *acute* diſeaſes, the uſe of drink, and thin diet, is ſo univerſal, as a remedy, that the rationale of the practice ought not to be overlooked. It is abſurd to ſee medical men leaving the choice of the quantity, and quality of drinks, to an ignorant nurſe, or capricious patient, ſince in all caſes they demand our notice; for example, in the phlegmatic habit, and where there is ſerous extravaſation, or tenuity of the fluids, dilution may become very prejudicial; on the contrary, it becomes of the utmoſt utility and importance, in youthful and plethoric conſtitutions, and in febrile, and inflammatory diſeaſes. It is the province of the phyſician to make this diſcrimination, as it preſuppoſes a knowledge of the animal œconomy, and diagnoſis of diſeaſes, as well as an intimate acquaintance with the nature of diluents, their power, and operation upon the reſpective conſtitutions, to render their uſe ſafe.

In *chronic* diſeaſes, alſo, the practice of the preſent day ſeems to turn almoſt entirely upon the doctrine of dilution; and that the benefit which mankind derive from a reſort to watering places, may be more fully underſtood, an attention to the preſent ſubject becomes eſſentially neceſſary.

Theſe conſiderations have induced me, not only to turn the ſubject in my own mind, but alſo to recommend it to the attention of all medical men; for although many obſervations have been, at different times, by various authors, made upon it, no attempt has before been made to concentrate, or bring it properly before the view of the publick.

In this diſſertation, if I have not advanced a great deal of new matter, I have endeavoured, by a new arrangement, to render the ſubject more perſpicuous, and to exchange obſcure and antiquated language, for that which is more ſuitable to the preſent times.

From the connection of the remedy with every part of the human frame, I have been forced to enter into phyſiological diſcuſſions, and decide upon ſome controverted opinions, before I could conduct the remedy to its final operation; although the limits of this treatiſe were hardly ſufficient to diſcuſs one of them fully, I have found it expedient to compreſs the whole into ſuch ſmall compaſs, as inevitably to cramp my ſentiments.

To attempt to explain the effects of the numerous liquids, that come under the denomination of diluents, would involve me in the conſideration of our common aliment, which is generally fluid in acute diſeaſes; but as I mean to treat of them, with a curative intention, either as a remedy of themſelves, or as aſſiſting the operation of other remedies, it will be neceſſary towards illuſtrating the ſubject, and giving the moſt ſpecific idea of their mode of acting, to confine myſelf as much as poſſible to the elementary principle * *water;* ſince it is the baſis of all diluents, their fluidity depending upon the quantity of it preſent; at the ſame time, this does not preclude the neceſſity that ſometimes will ariſe, of conſidering them in the manner they are often uſed in the ſick room, as containing a portion of nutriment, or any other augmentation, that will render their uſe more ſucceſsful and expedient.

There is, throughout the whole creation, for the wiſe purpoſe of ſucceſſion, a conſtant mutation, or ſpontaneous tendency in matter to perfection, and to decay. In the ſame manner, as there is now a tendency in a piece of wood to corruption, ſo there was formerly the ſame tendency to perfection, while it was growing into a tree. This evolution, which alſo takes place in the human body, requires a conſtant change of the fluids, which are naturally inclining to an acrid, or putreſcent ſtate; and as it is likewiſe the property of one matter, to work upon, and change another, the human body would be deſtroyed, and the living principle extinguiſhed, if it were not for the ſupply of diluted aliments, impelled into the minuteſt veſſels; which repairs the waſte, and removes the redundant parts of the machine; a conſtant ſupply of diluents is therefore neceſſary for exiſtence, even from the firſt rudiments of the tender embryo, to the laſt ſtruggles of departing life.

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* It is ſufficient for the purpoſe of this treatiſe, to conſider water as an element, although late chymical experiments render that doubtful; which tend to ſhow, that it is compoſed of dephlogiſticated and inflammable air.

Nature can be ſupported a long time without ſolids, but without fluids has a very ſhort duration; on the one hand, the functions of the body can be carried on, without increaſe of nutritious matter *; for it can exiſt a length of time on its own nutritious particles, like the turtle on its own fat; on the other hand, if there be a deficiency of fluids, nature will have a precarious tenure, and without them, would very ſoon periſh.

It might be advanced, that our aliment is held forth to us in a diluted form by nature; for milk was not intended merely, for the infantile, but alſo for the adult ſtate, ſince in the early ages of the world, mankind lived chiefly upon it; as appears

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* The Stirling Caſtle, of 74 guns, was loſt on the Silver Keys, in the Weſt-Indies, in the hurricane of the year 1780: ſome of the crew arrived on a raft, ſafe at Jamaica; their exiſtence was ſupported at ſea without food, for many days, by immerſing the body in the ſalt-water, and wetting the clothes with it. In which caſe, as there could be no abſorption of nutritious matter, the body muſt have been merely preſerved by the watery particles keeping up an impletion of the veſſels, and preventing putreſcency of the fluids.

from their collecting lacteſcent animals, and reckoning their riches in proportion to their numerous flocks, which, the ſcripture ſays, furniſhed them with food and raiment: in thoſe days men were longer lived, and healthier than in the preſent, when great quantities of animal ſolids are devoured: but I ſhall avoid, as much as poſſible, the conſideration of them in a dietetic view.

Water is the moſt ancient, and ſtill the moſt univerſal drink, among mankind; and as in the ſcience of medicine it is uſed either ſimply in its natural ſtate, or as the component part of all diluents, it will be therefore neceſſary, before we attempt to account for their action, to conſider ſuch properties of this menſtruum, as relate to medicine, or render it an attenuant.

WATER.

Water, when free from extraneous matter, is always the ſame; and the different kinds only vary in having different ſubſtances combined with it; therefore has been by philoſophers reckoned one of the elementary bodies. All animated nature is formed from it, and reſpirable air; we ſee that a plant, and many animals will live on water, and reſpirable air, grow, and arrive at perfection, by them alone: thoſe animals, which do not apparently live on theſe, live on other animals which are produced from water and air *: likewiſe, every ſort of animal and vegetable ſubſtance, when diſtilled, affords the ſame chymical elements †. The materials

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* Helmont, Paracelſus, Thales and Boyle, reckoned it the ſtamen of all things; Sir Iſaac Newton ſaid, "that all beaſts, birds, fiſhes, inſects, trees, and vegetables grow out of water, and by putrefaction return to water again."

† Both animal and vegetable ſubſtances, diſtilled in a retort, afford empyreumatic oil, volatile alkali, and charcoal.——Dr. George Fordyce's Chymical Lectures.

therefore being the ſame, the only difference is, in the manner of combination and organization; and a human body calcined, would leave but a very ſmall portion of ſolid matter.

Water generally contains extraneous corpuſcles, ſome of which are nutritious; for it affords leſs nouriſhment to plants, the oftener it is diſtilled; and might by this means be rendered unfit for vegetation; therefore, it is more properly called the vehicle of nutritious particles, than the nutriment itſelf.

The PROPERTY of water that is moſt obvious and ſtriking, is fluidity. The conſtituent parts of all fluids, are fine ſmall particles, whoſe attraction of coheſion is leſs than their attraction of gravitation; of courſe they eaſily move over one another, and naturally aſſume a ſpherical figure; although in a congeries they have a ſmooth ſurface.

* This property is the conſequence of heat, which has the power of deſtroying every attraction, and is the agent which gives fluids their form; for both mercury and water become ſolid by congelation; and without the ſun, there would not be any ſuch thing in nature, as water or humidity; the ſea and rivers would be dry and hard as a ſtone, which are now fluid in the heat of the atmoſphere. When water is wanted for a diluent, heat may be often employed to augment its fluidity ſtill further.

Except fire, water is the moſt penetrating of all bodies, for the moſt ſolid ſubſtances are permeable to it; as was proved by the Florentine experiment †. This

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* Sand has many properties of a fluid, and may be reckoned one, as it is not only moveable, but is in many places of ſo looſe a texture, as to drown a man. Sir Iſaac Newton, in the beginning of his Principia, ſpeaks of ſand and powders, as of imperfect fluids.

† The Florentine experiment was, water ſhut up in a ſphe-

This property renders it ſo powerful a ſolvent, that it will paſs through pores ten times ſmaller than air will, for it eſcapes through a piece of leather, or a bladder, that will retain air; its ſmall humid particles penetrating and diſſolving the glutinous connection of their fibres, and rendering them more pliable.—The ſolvent power of water, is the reaſon of

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ſpherical veſſel of gold, then preſſed, or hammered, with a violent force, till it made its way through the pores, and wet the ball on the outſide; but at length it made a cleft in the gold, and ſprung out violently. Many people think this experiment not deciſive, in proving the incompreſſibility of water, as the capacity of the ball was probably much diminiſhed by preſſure altering its ſhape; nor does it prove the elaſticity of water, as the elaſticity of the gold might be the cauſe of the ſudden eruption of the water. The ſame experiment has been made by Sir Iſaac Newton, and others, with different metals, which are leſs ductile than gold, and ſeemingly with the ſame effect; and Sir Iſaac remained of opinion, that not any fluid, in its natural ſtate, was elaſtic or compreſſible, except air.—Mr. Canton, on the contrary, made experiments to ſhow, that water was more or leſs compreſſible, according to the different conſtitution of the atmoſphere; and Profeſſor Bergman ſays it is compreſſible in a ſmall degree.

its being always loaded with heterogeneous particles; ſome from their fineneſs being ſuſpended, and others diſſolved in it.

The other properties are, its being colourleſs, inſipid, inodorous, and uninflammable.—There are ſuch great diverſity of opinions reſpecting its compreſſibility, that we are ſtill left doubtful on the ſubject.

River water will diſſolve ſalt, after which, it will receive a certain quantity of ſugar, another of alum, and perhaps other bodies, without increaſing its bulk or dimenſions, but only adding to its weight; owing to there being certain ſpaces unoccupied between its particles, ariſing from their ſpherical figure; ſo that when it is ſaturated with one, it will mechanically receive other ſubſtances; after all, will unite with more bodies chymically; and when ſaturated with fixed air, will diſſolve ſuch ſubſtances as it would not otherwiſe have acted upon.

All theſe properties unite to render water a moſt excellent vehicle, for the purpoſes of the animal œconomy. Its inſipidity, and want of ſmell, render it inoffenſive to the ſenſes; its poroſity renders it an univerſal and uſeful menſtruum; its fluidity, the moſt commodious vehicle for nutritious matter; and its penetrating, and ſolvent power, the fitteſt attenuant to enter the ſmall veſſels of the human body.

The QUALITY of the water to be uſed, ſhould be conſidered as a circumſtance of the greateſt importance, both for the prevention and cure of diſeaſes; and it was for this reaſon that Hippocrates paid ſo much attention to the ſubject.

The change of air has frequently received the credit of a cure, which was entirely owing to the change of water;

and many times, unſuſpectedly, from the gradual and permanent application of particular waters, chronic diſeaſes, and peculiarity of conſtitution, have originated, and laid the foundation, in early infancy, of future evil. Many are of opinion, that the large glandular ſwellings, on the neck of the inhabitants near the Alps, in Switzerland, and of Derby Peak, in England, proceed from the impurity of the water in theſe countries *; and Dr. Cleghorn obſerves, that, in Minorca, indigeſtion, ſwelled abdominal viſcera, obſtructed livers and ſpleens, were produced, both in men and brutes, by the badneſs of the water.

The moſt acute diſeaſes, alſo, very frequently ariſe from the ſame cauſe,

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* Three of theſe inhabitants were ſhewn in the Hay-market very lately, under the deſcription of the three wonderful *Craws*; they came from the Pais de Vaud, where the diſeaſe is called by the French name, les goitres; which diſeaſe, by ſome, is attributed to the vallies being humid, from their vicinity to high lands.

ſuch as diſorders of the bowels, to which children, and tender conſtitutions, will be more liable. In hot climates, where greater quantities are drank, and the waters are more impure, this is moſt evident. Among the ſailors in the Eaſt and Weſt-Indies, even when they do not go on ſhore, fevers and fluxes are induced by the water, in proportion to its impurity; and on the coaſt of Guinea, where the waters are exceſſively bad, the ſcurvy, ſwelled and ulcerated legs, with worms in them, are the common fate of Europeans, whoſe deſtiny leads them to that unhoſpitable ſhore.

The *ſalutary* effects of water depend upon its ſoftneſs and purity. From the clear appearance of ſpring and pump water, we ſhould naturally be led to give it a preference to rain, or river water, if experience and chymiſtry had not taught us, that every kind of hard water contains ſubſtances which act, not only imperceptibly upon the living fibre, but likewiſe render the water leſs fit to unite with the fluids, or permeate the ſmall veſſels of the machine; we ought, therefore, to endeavour to obtain the ſofteſt and cleareſt water, unleſs we want it to keep a long time, which the ſoft water, by containing animal and vegetable impregnations, will not do.

The *ſoftneſs* may be judged of, from its combining readily with, and not curdling ſoap; or by its boiling vegetables ſoft and tender.

The *purity* is to be known by its levity, tranſparency, inſipidity, and want of ſmell; but by theſe we are not always able to detect foreign bodies, which it imbibes from the minerals and metals, through which it percolates; which are only diſcoverable by a chymical teſt.

It may be rendered *ſofter*, by adding about eight or ten grains of an alkaline ſalt, to a pint; or by adding the ſalt very ſlowly, in a proportion, till no more lacteſcency is produced. Boiling, dropping from a height, expoſure to the ſun, or ventilating it, in the manner that is done on board of ſhip by Oſbridge's machine, are proceſſes which free it from putrid volatile particles, and render it ſofter.

Its *purity* may be improved by a few grains of alum added to a pint of water; neither this, nor the aforeſaid alkali, will render the water leſs potable, or wholeſome: it may alſo be rendered purer, and ſofter, by filtration through a ſtone or ſand. Fermentation does not ſoften it very much, although it renders it purer; the wholeſomeneſs of malt liquors will therefore depend a great deal on the ſoftneſs of the water uſed in their preparation.

Putreſcency is the moſt deleterious quality that water can poſſeſs, and ariſes from the mixture of putrid animal and vegetable ſubſtances with it; frequently water appearing perfectly pure, will have a fœtid property in a very great degree. There is an animalcule in running waters, which ſoon dies by keeping, or confining it from the air; then produces ſo great a fœtor, that the water becomes exceedingly offenſive, although there is not one animal to a million of parts of the water. The *Thames* water, which does not contain one part of mucilage in five hundred of the water, undergoes a fermentation by keeping; frequently the putrid matter in it generates a quantity of inflammable air, for I have ſeen the vapour from a caſk of Thames water, burn for ſome time, by a candle being brought near it; which water, after it had gone through the acetous, and putrid fermentation, became again pure and clear. All theſe putrid mixtures may be entirely deſtroyed, by the addition of unſlacked lime, which will alſo preſerve it from the putrefactive fermentation; but as it renders the water unpleaſant, and frequently unwholeſome, it may again be precipitated from the water, by means of fixed air; for which purpoſe a variety of plans have been propoſed *.

Water keeps much longer ſweet in earthen or ſtone ware than in glaſs, and is moſt apt to putrify in wooden veſſels.

Rain, and *ſnow* water, are preferable to any other natural waters; and would be perfectly pure, if they did not meet with duſt, and other extraneous matters, in falling through the atmoſphere; but it is very difficult to collect them in ſufficient quantity for the purpoſes of life.

River waters are better than hard waters, eſpecially if not taken after great falls of rain, which render them thick and muddy; particularly in hot climates, they often receive from the land, vegetable and animal impregnations, which are productive of diſeaſes; for this reaſon, the inhabitants of Guinea avoid uſing the river water immediately after heavy rains.

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* For the methods of purifying water, there are full, and ſatisfactory accounts in Dr. Lind, Dr. Alſton, and Mr. Henry's publications on the ſubject.

The moſt *unhealthy* of all waters, are from ſtagnant lakes and ponds, which have no motion or ſprings; and the *beſt* natural waters are obtained from ſprings, or currents, on high lands, that conſiſt of pure earth and gravel, and are ſupplied from the clouds; but the pureſt of all, is diſtilled water, after the firſt runnings are thrown away, and the remainder has ſtood ſome time expoſed to the air, to remove the empyreumatic flavour, which renders the taſte unpleaſant, and prevails in a greater or leſſer degree, according to the impurity of the water before diſtillation. I am very glad to ſee that this water has at length obtained a place in the Pharmacopeia of London.

A

TREATISE ON DILUENTS.

CHAP. I.

THE THEORY OF DILUTION.

WATER procured pure by any of the aforeſaid means, might of itſelf, on many occaſions, be the only diluent neceſſary in medicine; but as there is a variety of combinations which render it more pleaſant, and frequently more efficacious, we muſt conſider diluents generally, ſtill keeping in view the operation and effects of their fluid principle upon the body.

Fluids are admirably adapted to every part of the œconomy of the human body. In a healthy ſtate, to prepare the food, dilute the chyle, and fit it to paſs the lacteal and lymphatic veſſels; alſo to give fluidity and mildneſs to the blood, diſſolve its ſaline particles, and carry them off by the various outlets. In a diſeaſed ſtate, to render the ſmall veſſels permeable, promote the ſecretions, and carry off every thing putrid and acrimonious; beſides aſſiſting the operation of other remedies, and thereby removing morbid ſymptoms. The more clearly to underſtand this, I ſhall diſtinguiſh fluids, as they act in the mouth and fauces, in the firſt paſſages, in the circulation, the ſecreted liquors, and the lymphatic ſyſtem.

SECT. I.

IN THE MOUTH AND FAUCES.

ALL bodies muſt be rendered fluid to make a decompoſition take place in them. This being neceſſary for the uſe of the animal œconomy, when the aliments are not received into the mouth in a diluted form, nature has provided the ſaliva for the purpoſe of rendering them fluid; by this means to give them taſte *, and to fit them for the organs of deglutition and digeſtion; therefore, the frequent taking of liquids becomes neceſſary, as well to recruit, as on many occaſions to ſupply the place

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* We generally ſay that ſugar gives water a ſweet taſte; but the ſugar itſelf is as inſipid as the water, ſince by applying it to the tongue dry, there is no taſte, and it is only by a certain union with liquids that this is acquired.

of this uſeful ſecretion. It is for this reaſon, that nature has implanted in us the ſenſation of THIRST, to indicate our want of fluid; not having left it for reaſon to judge, in a point of ſo much importance to the preſervation of the machine. The influence of this ſenſation is ſo great, that however much perſuaſion may ſometimes be neceſſary to prevail on mankind to uſe other things that are requiſite for their health, there never is wanted much entreaty to make them take drink when they are thirſty.

Although we ſhould not indulge every inordinate appetite, yet it has often occurred, that inſtinctive appetites have directed us to the beſt method of cure in diſeaſes; and we ſhall find, that whenever the ſenſation of thirſt is preſent, there are commonly cauſes exiſting in the body, which require the taking of liquids; for this reaſon, when the ſerous and thinner parts of the human fluids are exhauſted (or the ſaliva deficient), either from increaſed motion, or evacuation; and when alkaleſcency is preſent, a dryneſs of the mouth and tongue takes place. Theſe parts being ſo plentifully ſupplied with nerves, and the papillæ, eſpecially towards the point of the tongue, poſſeſſing ſuch an exquiſite ſenſibility, when the body is debilitated, or otherwiſe oppreſſed with diſeaſe, the additional irritation of a continued thirſt will become ſo powerful, as frequently to produce watchfulneſs, delirium, and other dangerous ſymptoms, if there be not a liberal ſupply of drink. Temporary cheats, ſuch as acids, brandy, &c. can only increaſe the ſecretion in the mouth for a little time; but although they do not ſatiate the thirſt, they very much aſſiſt in allaying its irritation; and the concrete lemon and tartareous acids, which are not corroſive, (like the mineral acids) and in a chryſtalized form, may be applied with great convenience, in caſes where we cannot continually be adminiſtering drink.

SECT. II.

IN THE FIRST PASSAGES.

AFTER ſupplying the mouth and fauces with fluid, ſtimulating the ſalivary glands to excretion, and allaying the irritation of thirſt, diluents are accompanied with a compound effect, in the ſtomach and bowels.

I. Diluents facilitate the *ſolution*, and promote the *digeſtion* of the aliment in the ſtomach. The food being ſaturated with ſaliva, and received into the ſtomach, meets with the gaſtric liquor, which is not only a ſolvent, but alſo a coagulant to detain the ingeſta, till by theſe ſecretions, and a ſupply of drink, the ſtomach is enabled to aſſimilate various ſubſtances into one common matter, the groſſer parts of which preponderate, and the finer and more fluid paſs out of the ſtomach; by theſe means, water and farinaceous matter are ſo combined, as to form the fluids and nouriſhment of the body, and become part of the living animal itſelf; a certain ſupply of liquid is therefore abſolutely neceſſary to perform theſe operations, and a proportionate quantity will very much aſſiſt ſolution and digeſtion, eſpecially when the ſtomach is weak, and requires that aſſiſtance. In many diſeaſes, the ſtomach has not power of itſelf to digeſt ſolids; and frequently the ſaliva and gaſtric juices are viſcid, and in ſuch ſmall quantity, that the food will remain on the ſtomach undigeſted, unleſs a greater proportion of liquor is introduced; for theſe reaſons, Hippocrates, and almoſt all phyſicians have ordered thin diet in diſeaſes which are attended with ſmall digeſtive powers.

II. They leſſen the effects of *acrimonious* and *putreſcent* matters, by diluting them in the ſtomach and inteſtines.

A glaſsful of cold water will, in the firſt inſtance, frequently remove the heartburn: and by diluents obviating the ſtimulus of putrid or indurated fæces in the alimentary canal, they become highly uſeful in febrile affections; becauſe any feculent matters lodged in the bowels in theſe caſes, are apt to diſorder the whole ſyſtem. It is ſeldom that the ſtomach is quite empty on the attack of fever, and the remaining food is improperly digeſted; beſides, a quantity of mucus is apt to be collected, and a retention of the aliment takes place from debility and want of exerciſe; which, with increaſed heat, will render its contents acrid and ſtimulating, and therefore the application of diluents more neceſſary.

III. Liquids *accelerate the progreſs of the aliment* through the inteſtines. It is found, that the thinneſt diet makes the largeſt and quickeſt evacuation by ſtool, by which means leſs nouriſhment is conveyed to the ſyſtem, and the tone of the fibre is diminiſhed; on the contrary, thoſe people who uſe the moſt ſolid food are moſt nouriſhed, and acquire moſt ſtrength. A dog that is fed ſolely on animal food will get fat, but will ſtarve on a like quantity diſſolved in water.

It is an old obſervation, that great water drinking is productive of barrenneſs, which may be explained in the ſame way.

The French practice in the Weſt-Indies, of adminiſtering medicines in the form of ptiſans, is a very good one, eſpecially for purgatives; which always act ſooner and pleaſanter, in the alimentary canal, with a large proportion of the watery menſtruum, when nothing elſe is re-

required, than an increaſed periſtaltic motion of the bowels, without any ſtimulus to, or derivation of fluids from, the reſt of the ſyſtem: beſides their briſker action from the bulk of water, their cathartic powers are more uniformly diſperſed, over the whole ſurface of the inteſtinal canal; the ſtimulus being leſs in any particular part, the action is exerted more generally over the exhalents, and a more eaſy and ſpeedy evacuation produced, than by any ſtimulating purgative leſs attenuated.—Among the Engliſh, alſo, in the ſame climate, from the ſudden fatality of the diſeaſes, the practice has become very general, of adminiſtering all medicines in a liquid form, to render their action quicker, and give them a more ready entrance into the circulation; at the ſame time, practitioners recommend a great deal of dilution, to waſh off the bile, and other acrid matters from the body.

IV. Diluents operate differently in the firſt paſſages, as they are *hot* or *cold.*

When *cold*, they brace the ſtomach; and water drinkers are reckoned long lived, not ſubject to acidity, to have white teeth and good appetites; alſo in the morbid ſtate, cold water will often check vomiting; and with this view the ancients uſed it in intermittent fevers.

When *hot*, they have, in a ſmall degree, the power of relaxing the ſtomach, ſimilar to hot water externally applied; but they have this effect in a much greater degree, when they produce nauſea.

From theſe oppoſite effects, we ſhould rather adminiſter them hot than cold, in inflammatory diſeaſes, particularly in inflammations of the ſtomach itſelf; but not upon the principle of the old theory, that the coldneſs will produce viſcidity and obſtruction, as no component part of the blood can be altered by the coldneſs of liquids taken into the ſtomach, for the Italians uſe them in fevers, cooled with ice, without any bad, but perhaps good effect.

The only bad effect of cold liquids, will be in the firſt paſſages; for whether they are introduced cold or warm, they very ſoon acquire the ſame temperature in the ſtomach; it is true, indeed, that heat and cold applied to the firſt paſſages, will produce their relative effects, and theſe effects will frequently influence the actions of the general ſyſtem; as a draught of cold water may ſtop a hæmorrhage, or, in particular ſituations, induce a ſhivering fit; but they do not communicate their own temperature to the whole habit, as they are, ſoon after their introduction into the ſtomach, reduced to its temperature; ſo that it is not of ſo much conſequence, as it is commonly imagined, whether diluents be uſed warm or cold, in the generality of diſeaſes in this climate.

SECT. III.

IN THE CIRCULATION.

THE ardour with which mankind embrace and maintain novel opinions, leads them from that happy mediocrity, which is frequently as uſeful in ſcience, as it is in the affairs of human life: this we find to have been lately the caſe with the faculty, who, with a view to explode the once much admired doctrine of Boerhaave, have directed their attention ſo much to the ſtate of the ſolids, that they have entirely neglected that of the fluids; which laſt, from conſtituting the major part of the human fabric, certainly claim our notice.

I am of opinion that the condition of the body can be changed, by an alteration in the blood; which may be either too ſcanty or too abundant; too thick or too thin; and perhaps it may be of an acrid nature; particulars which ſeverally require our conſideration, in order to aſcertain the effects of diluents.

I. Diluents give tenſion, or *plenitude*, to the ſyſtem.

If the veſſels of the body were intirely full, it would be impoſſible that motion could be carried on in them; for this reaſon the auricles and ventricles of the heart are alternately empty, and the diameters of the veſſels never on the full ſtretch. In the human body, a ſet of blood-veſſels contains ſix times more fluid at one time than at another, and is nearly as full with the one quantity, as with the other; by reaſon of the elaſticity and muſcularity of their coats, which furniſh them with the power of always adapting themſelves to their contents, in order to maintain a certain degree of tenſion, neceſſary to circulation, and to admit a free determination of nervous influence; for on a ſudden removal of this tenſion, by evacuation, or by a change of the blood's diſtribution, fainting is produced[*].

I am of opinion, that we have it in our power to produce different degrees of plenitude in the veſſels[†]; becauſe we

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[*] An irregularity in this, has given riſe to the terms of collapſe and excitement; the exceſs of either being eſteemed by Dr. Cullen as morbid cauſes.

[†] Multa mala a nimia plenitudine oriuntur, § 518.—Inopia ſanguinis multum quoque nocet, § 526.

Plenitudo ad ſpatium vocatur ſiquando copia ſanguinis ejuſque mole, nihil præter ſolitum auctis vaſa quæ cum continet conſtringuntur, coarctantur ita ut ſolitam ſanguinis copiam et molem ægre, nec ſine incommodo contineat, veluti vaſis extremis et minutis multum conſtrictis, urgente febre, aut ſubito terrore, aut magno frigore, vel demum vaſis ipſis veluti in ſenibus concreſcentibus, eorumque nonnullis imperviis factis: vel denique ipſo corpore amputato membro, mutilato, § 522. Plenitudo ad vires vocatur, talis ſanguinis abundantia qualis vires moventes opprimat, ingens plenitudo hujuſmodi

we can evidently diminiſh the fluids, and ſhrink the ſize of the living ſolid, by evacuation; on the contrary, we have a ſtrong inſtance of repletion, in ſpontaneous hæmorrhages, and in thoſe patients who are in the habit of blood-letting; in both caſes, there are the appearances of a redundancy of blood, and ſuch plenitude in the veſſels, as to render a repetition of theſe evacuations neceſſary. If we were to take a labouring man from hard work, and make him lead an indolent life, in a very ſhort time, there would ariſe the appearances of increaſed fulneſs in his habit, in conſequence of the diminution of the ſecretions, and the want of his uſual exerciſe. Nothing will produce ſanguineous apoplexy ſooner, than the ſuppreſſion of the uſual ſerous diſcharges, or the dry-

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modi incommodum ſemper efficit et igitur ad vires dici poteſt. Frequenter tamen obſervatur iſtiuſmodi vitium vel ab exiguo ſanguinis exceſſu, qualem validus homo impune tuliſſet, ſi vires ægri quacunque cauſa multum fractæ fuerint, § 524.—Gregory's Conſpectus.

ing up of an old ſore. We are likewiſe told, that in youth there is a greater proportion of fluids to the ſolids, than in old age, when the quantity of food is diminiſhed. From a variety of circumſtances we muſt therefore conclude, that plenitude may be induced by a retention of the ſecretions, as well as by full diet and much drink *.

This fulneſs of the veſſels will ſeldom occur from increaſed ſeroſity; becauſe the ſecretions will be augmented, and the thinner parts run off again by the kidneys, as in great water drinkers; but at the ſame time, when the veſſels are in a ſtate of depletion, we may by an increaſe of ſeroſity renew their tenſion; for this purpoſe nature makes the appetite of thirſt immediately ſucceed great hæmorrhages, that a proper diſtention

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* There is a calculation in Lieberkuhn's Diſſertation, that if the lacteals are continually filled, and their action fully exerted, they can convey 25 lib. of chyle to the blood in the ſpace of an hour.

may again be given to the veſſels by dilution. It is advanced by an eminent profeſſor, that the fulneſs of the extreme veſſels, and the quantity of ſecretion, are in proportion to the quantity of water preſent in the body; diluents are therefore recommended by him, as a remedy for the contracted and ſpaſmodic ſtate of theſe extreme veſſels *.

More frequently, there will ariſe the appearances of *ſuperabundant* blood, from an increaſe of its glutinous part; occaſioned by a plentiful nouriſhing diet, a good digeſtion, little exerciſe, or much ſleep; which ſuperabundance will ſhew itſelf, by every ſymptom of turgid and diſtended veſſels, by drowſineſs and languor, by a full, and ſometimes oppreſſed, pulſe and breathing; by head-ach, vertigo, palpitation, apoplexy and hæmorrhages.

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* Vide Dr. Cullen's Firſt Lines on Fever.

On the contrary, *a ſcantineſs* of blood will originate from, vitiated and defective aliment, bad digeſtion, great evacuations, eſpecially hæmorrhages; from fevers, and other diſeaſes which exhauſt and deſtroy nutrition; and will be attended with the ſymptoms of emaciated body, with debility, languor, low ſpirits, and faintings.

II. Diluents *ſtimulate* the heart and arteries, and ſo promote the ſecretions.

Their ſtimulant power upon the vaſcular ſyſtem, is greatly owing to their bulk and weight. On their introduction, the firſt ſet of veſſels, the lacteals, are excited to action by this means; which is afterwards communicated to the blood veſſels, and heart; the ſame action is neceſſary to propel them through the body, that was at firſt excited by their introduction, for the more fluid that is received into the veſſels, the greater will be the action required in the vital powers, to propel that fluid forward; this is diſcoverable in the pulſe after a full meal; and I have ſeen a mild diluent excite a temporary fever without any effect of ſweating.

They have likewiſe a relative ſtimulus, depending upon their temperature; for when the body is heated, a diaphoreſis will frequently ſooner be excited, by a draught of cold water, than by any other thing; which I ſuppoſe acts in a manner ſimilar to what it does when externally applied to the body. I ſeldom drank cold water in the Weſt-Indies, without immediately perſpiring; and what is remarkable, the ſame effect was not produced, when ardent ſpirits were added.

On the contrary, when the body is cold, they are generally uſed hot, which is the practice common in this climate; the heat not only augments their fluidity, but alſo increaſes their relaxing powers. To aſcertain this, I put cold water into a funnel with filtering paper; at the ſame time, an equal quantity of warm water into another, with ſome of the ſame paper; the warm water filtered through, in half the time that the cold did; and on my paſſing both of them, ſeparately, through the ſame bladder, the warm water paſſed through the bladder in one-fourth leſs time than the cold required.

It is principally by their ſtimulating power, that they remove torpor, and produce watchfulneſs; which effects have given riſe to the practice of tea-drinking among nurſes, and midwives, in the night time, and are not more to be aſcribed to the tea plant, than to the quantity of hot water drank. For the ſame effects, we find Dr. Boerhaave ſtrongly inculcating the practice of warm diluents in the melancholic diſeaſe; although he aſcribed theſe to the diluents allaying acrimony, relaxing and ſtimulating the veſſels, and carrying off from the body, the ſluggiſh humours.

III. Diluents produce *tenuity* of the blood; by increaſing its ſeroſity, as well as by diminiſhing the vital powers.

The blood has a greater degree of thickneſs and viſcidity, in ſtrong animals, than in weak ones; hence the blood of bulls was reckoned poiſonous by the ancients, from its indigeſtibility in the ſtomach. It alſo varies in its conſiſtence in the human body, at different times, and in different people; appearing before coagulation, in one caſe thick and dark-coloured; in another, thin, and ſometimes like the waſhings of fleſh. On being drawn out of the veſſels, and ſuffered to ſtand, it in ſome caſes diſcovers a large proportion of ſerum, and the whole maſs, ſcarcely capable of coagulation; in other caſes, a larger craſſamentum, and that frequently differing in its texture. The coagulable lymph in ſome caſes, does not coagulate at all; and the coagulated ſerum is leſs firm at one time than at another.

An aqueous fluid is ſaid to combine chymically with the component parts of the blood, only in one proportion; but a larger quantity is diffuſed through the ſerum, and coagulable lymph, and can be ſeparated from them by filtration, which no mechanical power can do to ſubſtances chymically combined; this is called the ſuperfluous water of the blood, by a celebrated lecturer*; who makes an objection to the blood's being attenuated by drink, as it readily paſſes off again by the kidneys, as through a filter, leaving the component parts of the blood of the ſame viſcidity; and is of opinion that the blood can be ſo altered, only by putrefaction breaking down the red particles, or inflammation attenuating the coagulable lymph.

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* Dr. Geo. Fordyce.

If we are to judge from the analogy of the other ſecretions, we will ſuſpect that the kidneys do not act thus mechanically; and in many ſituations we find it extremely difficult to promote the evacuation either from the ſkin, or kidneys; nor does any ſecretion intirely reſemble our drink, which paſſes in a changed ſtate; and not ſo readily, but that there is always a large proportion of it abounding in the blood, mixed with the ſerum, which preſerves the blood's fluidity. There is a material difference, between increaſing the tenuity of the blood, and diſſolving, or breaking down its conſtituent parts; therefore, although I do not believe with the ancients that the blood is viſcid in diſeaſes, nor am of opinion, that drink can make its minute particles paſs through veſſels which otherwiſe would not receive them, nor that water will alter the red particles themſelves; yet I believe, it will mix with the other parts, ſeparate theſe particles, and leſſen the coheſion of the whole maſs, in the ſame manner, as, when the interſtices of any fluid are filled up by one ſtill finer, the particles of that fluid acquire a greater degree of mobility *. I alſo think, that the proportion of the thinner part of the blood can be leſſened, by drawing off the fluids ſuddenly, in large ſerous evacuations; or that it may be increaſed, by large quantities of liquids taken in; and for this reaſon, the dropſy ariſes from moiſt atmoſphere, poor living, and much watery drink †.

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* Diluentia imprimis medicamenta, aqua ſcilicet, et omnes potus tenues, quorum aqua longe maxima pars eſt, humores noſtros, præter naturam ſpiſſentes, efficaciſſime attenuant, modo largius hauſta fuerint, et per vaſa lactea in ſanguinem delata, § 1297.—Gregory's Conſpectus Medicinæ Theoreticæ.

† Fit porro nimis tenuis ſanguis, multo potu preſertim aquoſæ, cibi tenui et parum nutriente, parva concoctione in ventriculo, vel forſitan in pulmonibus; ipſiſque organis quæ partes craſſiores fingunt male ſe habentibus; ſuppreſſis excretionibus ſolitis tenuibus, ſu-

At any rate I may conclude, that drink thrown quickly into the veſſels, dilutes their contents; and therefore by a larger and thinner proportion of blood applied to the ſecretory organs in a given time, their ſecretions will be increaſed; and it will in this manner become a neceſſary indication in diſeaſes.

Diluents will alſo render the blood thinner in another, and more permanent way.

There is always a balance preſerved in a healthy body, between the ſolids and fluids.—An increaſe of nouriſhment will produce an increaſe of coagulable lymph, which will give a greater tone and denſity to the ſolids; likewiſe, ſtrong veſſels and a rigid fibre, will be

dore ſcilicet et urina, veluti frigore aut vitio organorum; vel demum et omnes fere medici putarunt, putrida univerſi corporis, et humorum præſertim, corruptione, § 529.—Gregory's Conſpectus.

productive of more denſe blood; which is the reaſon that ſtrong, and old animals, have a more viſcid blood, than weak, or young ones. Diluents therefore, from not having a ſufficient quantity of nutritious matter in them, to repair the daily waſte of the machine, will permit the force of the fibre, and vital power to decline, and the conſiſtence of the vital fluid to be diminiſhed.

Bleeding, by drawing off the coagulable lymph, and red particles, will evidently thin the blood in the firſt inſtance; as from an after ſupply of thinner fluid, the proportion of the thicker, or vital part will be diminiſhed. Perhaps cathartics, which prove attenuant, may ſometimes operate in the ſame way, by drawing off the coagulable lymph; but in general, cathartics require a continued uſe, to render the blood thinner; and then they principally act, by drawing off the contents of the alimentary canal, and of the innumerable excretories that open into that cavity, and thus diminiſh nutrition. We ſhould be apt to imagine that in diarrhœa and dyſentery, from the great and continued evacuations, eſpecially ſerous ones, the thinner fluids would be evacuated, and the blood acquire a greater degree of tenacity; but the reverſe is the caſe; we find more generally a tenuity or diſſolution of blood, in conſequence of thoſe diſeaſes, from want of nutrition and decline of the vital power.

Tenuity of blood upon theſe principles, may ariſe, on the one hand, from a fault of the aſſimilating and digeſtive organs, from defective aliment, an obſtruction to the chyle's entering the circulation, and difficult reſpiration; on the other hand, from various evacuations, eſpecially of blood; from ſuppreſſed ſerous evacuations, putreſcency, and too much water taken in at the mouth, or by the ſkin*.

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* It is almoſt incredible, the quantity of water that is abſorbed

The effects of tenuity are, paleneſs, a languid and weak body, flaccid and relaxed ſolids, hydropic effuſions, tendency to putrefaction, an imperfect action of the different functions: moſt probably the dropſy ariſing ſo ſuddenly after hæmorrhages, is occaſioned by thinneſs of blood.

Neither tenuity, nor viſcidity of the blood occurs very often, for nature is ever vigilant to preſerve a conſiſtency in it; to prevent its becoming permanently thin, by a proportionable power in the moving fibre, together with the aſſiſtance of the excretories and the common diet; to prevent its becoming thick, by occaſionally ſuppreſſing the evacuations, attracting moiſture from the at-

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abſorbed by the ſkin; there are authenticated hiſtories of gallons daily diſcharged by urine, in diabetes, for ſix weeks together, more than was drank. Dr. Percival affirms that one of his hands, after chafing, imbibed an ounce and a half of water in a quarter of an hour.

moſphere, and the uſe of drink from a ſupervening thirſt.

IV. Diluents *weaken acrimony*, and leſſen *putreſcency* in the blood.

It is extremely difficult to prove that there is acrimony in the blood, and nature is wonderfully guarded againſt it, for whatever food animals uſe, a mild chyle is generally prepared from it; and we cannot diſcover it by the taſte or appearance of the blood, yet, from particular circumſtances, we are led to believe it does exiſt there. There frequently is an increaſed action of the ſecretory organs, as well as of the heart and arteries, from acrid ſubſtances taken inwardly; alſo, the ſecreted fluids are very acrid at particular times. By chymical analyſis it is found, that the ſalt which we uſe in our food, paſſes into the blood; ſal ammoniac, muriatic acid, and volatile alkali, are found, by the changes which are going on in the body, and we frequently ſwallow ſelenites in our water; all which ſalts may be procured from the ſerum of the blood, and from the urine*. There are many other ſubſtances that muſt paſs through the circulation; as for example, the oily particles of milk ſecreted from the breaſt, taſtes of the food which the animal has eaten; purgatives which the mother has taken, communicate that property to the milk, and purge the child; alſo in the jaundice, the bile is abſorbed and carried to the minuteſt parts of the circulation, and produces indolence, torpor, and ſometimes fever.

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* The ſerum chymically conſiſts of a coagulable matter and water, in which common ſal ammoniac, phoſphoric ammoniac, generally common ſalt, frequently ſelenites and fixed ammoniac, are diſſolved:—Dr. Fordyce's Natural Hiſtory of the Human Body.

Plurima revera acria in corpus quotidie ingeruntur, &c. vel ſaltem plurima aqua diluta, vel glutine, oleo, phlogiſto obtuſa multum ſuæ acritudinis deponunt, et aſſidue e corpore tanquam noxia excernuntur, § 537.—Gregory's Conſpectus.

From our being able to detect theſe extraneous matters in the blood, it is equally probable, that many others may exiſt there. If acrimony did not exiſt in the blood, how can we well account for exanthemata, ſcurvy, lues, cancer, jaundice, or even the ſaltneſs of the urine? Perhaps alſo the blood is alkaleſcent in hot countries, and that an experience of this, taught Moſes to deny the Iſraelites the uſe of blood in diet.

In PUTRID diſeaſes, we ſhould imagine that diluents, either by increaſing the quantity of the blood, or leſſening its coheſion, would be prejudical, where it is already ſuppoſed to be thin and broke down; however, the contrary is the caſe; for we find by their increaſing the ſecretions, and ſupplying freſh matter to the blood, they are beneficially uſed in the moſt malignant and putrid fevers; eſpecially when their virtue is increaſed by a nutritious and ſtimulant property.

Among the faculty it is ſtill undecided, how far the blood is putrid or diſſolved in diſeaſes *. It has been a received opinion for a long time paſt, that the ſolids prepare their own fluids, and that the latter are chiefly influenced by the former; which opinion has lately been carried further, and an attempt made to expunge intirely the humoral pathology, in ſtriking out of the liſt, the moſt remarkable of our putrid diſeaſes, the ſcurvy, which was formerly ſuppoſed to have been connected with, or dependant upon a bad ſtate of the blood. A phyſician

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* Dr. Fordyce, in his Natural Hiſtory of the Human Body, treating of putrefaction of the blood, ſays "What is commonly called putrefaction, conſiſts of two fermentations, which we ſhall call by the names of the firſt and ſecond ſtage. The firſt and ſecond ſtage of putrefaction takes place in a ſmall part of the blood, or it is deſtroyed by ſome other operation, for after having coagulated the ſerum, if we ſqueeze out the water and evaporate it, there is left a mucilaginous matter, ſimilar to that formed by putrefaction."—"In diſeaſes the firſt ſtage often takes place in part of the blood; the ſecond ſtage ſometimes, although but ſeldom."

ſician of extenſive practice and abilities * aſſerted, that he bled a great many ſcorbutics, where the blood appeared natural, and in many caſes with ſize upon it. Another very judicious phyſician † has endeavoured to ſhow, that thoſe diſeaſes which have been ſuppoſed to ariſe in a peculiar manner from a depravation of the vital fluid, are really owing to an original diſorder of the ſolids; and that a deficiency of nutriment, and not any alkaline quality of the diet, produces the debility and ſymptoms of ſcurvy. A learned profeſſor ‡ has not adopted theſe opinions; and there is an attempt in an ingenious publication to refute them from practice ‖. It is not required of me, for the purpoſe of this treatiſe, to

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* Vide Dr. Lind's Treatiſe on the Scurvy.

† Vide Dr. Milman's Treatiſe on the Source of the Symptoms of Scurvy.

‡ Dr. Cullen's Firſt Lines.

‖ Obſervations on the Scurvy by Mr. Thomas Trotter.

enter minutely into theſe conteſted opinions, but to deliver my own.

In general, blood drawn from the veins in putrid diſeaſes, has all the appearance of tenuity, viz. a looſe texture, and a great quantity of ſerum. Perhaps theſe patients before-mentioned, whoſe blood was ſizy, had been on the recovery on ſhore, where they were living on broths, and vegetable diet, which would very ſoon change the ſtate of the blood: for we frequently ſee ſcorbutics at ſea, in the laſt ſtage of ſcurvy, recover in a few days after they are landed; and the moſt inveterate ulcers, that would yield to no other treatment, heal ſuddenly by an alteration in the diet and air. Or the blood drawn, might have been from thoſe ſcorbutics who had topical inflammations; which always produce ſuch appearances; for we know, that in whatever ſtate the habit or blood of a patient may be, a little time before an inflammation ſupervenes, it will become ſizy very ſoon after. The buffy or ſizy appearance of blood drawn, is not a ſign of thickneſs or richneſs; but rather ſhews a thinneſs, or at leaſt a leſs tendency in it to coagulate; and ariſes from violent agitation and the action of the veſſels upon it: by the blood's taking longer time than uſual to coagulate, the red particles ſubſide, and the pure coagulable lymph appears; which may occur in any ſtate of the body, and we ſee it in the ſoundeſt health, quickly induced by an external injury.

I am of opinion that the ſolids and fluids, in diſeaſes, are never ſeparately affected, for any length of time. Although the ſcurvy and its ſymptoms ſhew a weakened, and diſeaſed fibre, yet it was originally induced by a vitiated and defective chyle, which made a more imperfect blood; therefore, the ſolids from want of due nouriſhment and conſequent tone, have a weakened and diſeaſed action. It is only, by a proper quantity of chyle that the blood becomes nutritious, and that the vital power is maintained ; hence we find Dr. Stark produced a diſeaſe ſimilar to the ſcurvy by ſtarving himſelf *. On the contrary, if the ſolids are by any means primarily weakened, or have a diſeaſed action, the fluids will alſo be very ſoon changed, and on many occaſions poſſeſs a ſeptic tendency. It is a property of putrefaction to diſſolve bodies ; and this is at the ſame time accompanied with an eſcape of volatile and offenſive effluvia ; we are therefore led to believe, that the ſame proceſs ſometimes takes place in the living body ; for we find the blood diſſolved in fevers, and other diſeaſes ; many of which are alſo accompanied with a very offenſive ſmell of the body ; and theſe take place more readily in ſituations which are favourable to putrefaction,

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* There are two caſes related by Dr. Milman, and communicated by Sir Geo. Baker, Bart. in the Medical Tranſactions where the ſcurvy was produced by the want of due nouriſhment.

faction, as in hot climates, in which there are very generally this odour, and tenuity of blood attending diſeaſes. We likewiſe frequently ſee thoſe patients who die of lingering diſeaſes, or of thoſe which are called putrid, change and turn offenſive, immediately after death, as if the putrefactive proceſs had been far advanced in them, before that period.

The living principle operates powerfully in preventing putrefaction, in the ſolids of the body, and alſo in the fluids to a great degree; but the latter at different times certainly acquire a tenuity, and what I would call a putreſcent ſtate, rather than a ſtate of putridity. This may be induced by contagion, poiſons, violent action of the veſſels, abſorption, or the introduction of a bad or deficient chyle, the two laſt primarily exiſting in the fluids. The ſcurvy certainly has its remote cauſe in the fluids, being produced by indigeſtible impoveriſhed food; for a piece of tanned leather, contains as much nouriſhment as ſome ſpecies of ſalt beef and biſcuit uſed at ſea, and diluted with a ſhort allowance of fœtid water; in which caſe there is, not only a deficiency of nouriſhment, but, from the quality of it, there ariſes moſt probably an acrimonious ſtate of the blood; ſince we ſee ſuch great, and ſudden benefit derived, from the uſe of acids, increaſe of the ſecretions, fixed air, and antiſeptics, that convey no nouriſhment to the ſyſtem.

In treating of the diſeaſes of the blood, I have not adverted to the opinion of its having life *, or properties different from

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* Mr. John Hunter, a ſurgeon of the higheſt rank, and ingenuity in the profeſſion, holds the opinion, that the blood is poſſeſſed of a living principle as well as the ſolids, and that the life of the body is derived from the blood; that life is as much the property of every individual part of the body, as gravity is of every particle of matter, every ſingle part being as much alive as the whole; likewiſe that the blood is as capable of diſeaſe as the ſolids are, and the blood becoming firſt diſeaſed, the ſolids conſequently ſuffer.

from other inanimate matter, but have rather indulged a chymical idea of it; there will therefore be no impropriety in introducing the following obſervation. Putrefaction being a proceſs of fermentation, where ſubſtances are put into ſuch a ſituation that the elements of the compound are ſeparated, and recombined in a different manner; the latter attraction muſt be ſtronger than the former, otherwiſe no decompoſition would take place; there will therefore be no ſuch thing as a re-fermentation, or a putrid ſubſtance returning to what it was before; and if the blood has once acquired a putridity, or been otherwiſe decompoſed, it cannot be reſtored to its priſtine ſtate, but muſt be evacuated, and replaced by freſh matter; accordingly we find the practice is, to open the ſecretory veſſels, and by vegetable and nouriſhing aliment, to ſupply the blood with a bland chyle; as part of which regimen, diluents are much extolled by Dr. Lind, and recommended from Cook's Narrative. For the ſame reaſon, officers by having tea, beer, wine, and more abundance of diluents than the men that ſerve under them, eſcape the ravages of the ſcurvy, and every putrid diſeaſe much longer on board of ſhip, as well as on all other military expeditions. It was remarked, that on the Spaniſh main in the Weſt-Indies laſt war, the officers at Fort St. Juan, who were moſt plentifully ſupplied with wine, and other liquors, reſiſted the general fatality longeſt; and Dr. Cullen has made diluents an indication for removing putreſcency in fevers.

SECT. IV.

IN THE SECRETIONS AND LYMPHATIC SYSTEM.

IN the laſt place, we ſhall conſider the operation of diluents in other important channels, wherein their effects are more obvious than in the red veſſels.

The good effects of dilution in waſhing out the URINARY PASSAGES, have given riſe to a great many encomiums by old authors, in favour of cold water; and by ſome to tea-drinking in nephritic complaints.

An opinion was advanced ſome time ago, that from the ſuddenneſs of the evacuation of urine after drinking, and from that evacuation being continued, after the ureter of a dog was tied up, there was another paſſage for liquids to the bladder, than by the courſe of the circulation; explained by the abſorbents of the bladder anaſtomoſing with the lymphatics of the inteſtines*; which opinion, though very ingenious, was not adopted.

It appears to me rather, that fluids taken in, act like a *vis a tergo* in producing a quick ſecretion from the kidneys, the firſt urine ſecreted not being the laſt liquor drank; for immediately after drinking freely of aqueous draughts, the firſt urine ſecreted, contains a great portion of mucilage, and the ſalts of the blood, but afterwards, with a continuation of the ſame dilution, it contains leſs and becomes milder and thinner; and by this means might be rendered quite inſipid. Mechanically ſpeaking, ſucceeding quantities of liquid, when urged on, will always expel the quantity that lies before them; in this manner the kidneys are ſtimulated to ſecretion; the ſuddenneſs of which, likewiſe ariſes from an irritability of conſtitution, as it ſo often occurs in hiſteria. Frequent ſtimulus to the diſcharge of urine alſo, depends upon habit, for in great drinkers, and ſome irritable people, every drop will produce an immediate irritation on the kidneys, and run off; whereas in Engliſh ladies, who from delicacy are accuſtomed to retain it in the bladder, the kidneys act more ſlowly; but in ſome foreign countries, and among women of leſs ceremony, it is quite otherwiſe. The quick ſecretion of urine then, will depend, partly on the quantity of drink taken in, partly on the irritability of the ſyſtem, and of the kidneys in particular. The ſuddenneſs of the expulſion afterwards, upon the diſpoſition of the bladder itſelf, and the quantity preſent in it.

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* By Mr. Darwin.

Diluents therefore, by increaſing the flow of urine, will diſcharge all the ſuperfluous ſalts of the blood, with the recrementitious parts of our juices; and prove ſerviceable in gravel, and nephritic diſeaſes, to waſh out ſandy concretions from the kidneys and bladder; perhaps to alter the ſtate of the ſecreted liquor, ſo as to make it leſs liable to form depoſitions. Likewiſe in many other complaints of theſe organs, as inflammations, fluor albus, and gonorrhœa, they will dilute the irritating ſalts of the urine, and waſh off offending matters from the excretory ducts.

The nature of the PERSPIRATION is analogous to the urine, only differing in the ſmell, which it receives from the ſebaceous glands of the ſkin; and theſe two ſecretions alternate with each other, according to the heat of the atmoſphere. By theſe, as well as the ſecretions in general, a quantity of ſaline matters, and other ſubſtances, are ejected from a *healthy* body, which are uſeleſs, or would be deſtructive if retained; and in various *diſeaſes*, putrid, variolous, morbillous, or other extraneous and volatile ſubſtances, are carried off by the ſecretions; the ſtate and facility of which, depend very much upon the quantity of liquids taken in.

The ſecretion of the MILK from the breaſt, will alſo be much increaſed by drink; not only the properties of the milk, will depend upon thoſe of the aliment; but likewiſe its quantity, upon the proportion of liquids taken in; therefore nurſes are ordered to uſe porter, and other nutritious fluids freely.

In ſcrophula and diſeaſes of the LYMPHATIC SYSTEM, experience hath ſufficiently eſtabliſhed the uſe of diluents. Mineral waters and ſea water are commonly preſcribed; and independent of the benefit derived from the bracing and purging qualities of theſe remedies, they have other powers ariſing from their quantity.

The lymphatic veſſels being deprived of the propelling impulſe of the heart, and having no other principle of motion than their irritability, and contiguous preſſure, to carry forward their contents*, a larger quantity of liquid applied to them, from its weight and bulk, will excite their action more powerfully; at the ſame time by thinning their contents, will ſecure a more effectual conveyance of chyle into the blood. By theſe means in diſeaſes where the channels are obſtructed, by any glutinous and tenacious matter, or curdy and calcareous ſubſtances (which are frequently found in the lymphatic glands), diluting liquors will reſolve them; and more particularly act, in a direct manner, upon the meſenteric glands, through which all the chyle muſt paſs. Theſe glands are the moſt numerous of the lymphatic ſyſtem, and almoſt always obſtructed in ſcrophulous and rickety diſeaſes.

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* The lymphatic and lacteal veſſels, are of the ſame kind; forming a diſtinct ſyſtem from the red veſſels; and whoſe ſole office is abſorption.

It muſt be ſufficiently evident that the more liquid that is carried through the lymphatics in general, the thinner will be their contents, the quicker their action, and the chance of removing their obſtructions the greater.

CHAP. II.

THE APPLICATION OF DILUTION TO PARTICULAR DISEASES.

TO enter into the conſideration of every diſeaſe ſingly, where drink is uſed, would occupy the ſpace of whole volumes, and perhaps include the entire train of maladies that invade the human frame; but my intention is only to convey a ſummary idea to the reader's mind, by making a few remarks on thoſe diſeaſes where they are more obviouſly required; in which attempt it is neceſſary, to be methodical, and as Dr. Cullen's Noſology is the lateſt and beſt, I ſhall endeavour nearly to follow his arrangement, in pointing them out.

Diluents are INDICATED in every order of FEBRILE AFFECTIONS; and are more eſpecially required, when fevers put on a continued form, or the nearer they approach to it. In all theſe diſeaſes; more particularly in the ardent or inflammatory fever, they ſhould be uſed very freely; but in ſmall quantities at a time, otherwiſe they will be apt to over-diſtend the ſtomach, produce uneaſineſs, and frequently vomiting. There is always a great neceſſity for examining the patient's tongue to judge, not only, of the degree of fever, the ſtate of the ſtomach, and nature of the diſeaſe, but alſo of his thirſt, and the quantity of drink required. It frequently happens, that he is in a ſtate of ſtupor and delirium, and not able to call for drink, which renders this attention more neceſſary; for theſe ſymptoms are always aggravated, and ſometimes produced, by the irritation of a parched mouth and tongue; to prevent it, a repetition of cooling drink is neceſſary.

It is during the paroxiſm of fever that drinks are moſt required. In the beginning of theſe diſeaſes they ſhould be of a more thin and watery nature, than in the progreſs or decline; at which time, they ſhould approach nearer the conſiſtence and nature of diet. Dr. Fothergill relates an inſtance of a patient, who drank twelve pounds of barley water, every day for a month, to remove a fever, by which means he fell into an incurable dropſy; which if it had been drank for a ſhort time, or only during the violence of fever, might not have produced that effect, as we do not find the Italians particularly liable to dropſy, who uſe as large a quantity in fevers daily.

Dr. Lind of Edinburgh obſerves,—that in the REMITTENT fever, cooling acidulated liquors were of the utmoſt ſervice; as they corrected the putrid humours, leſſened the heat and thirſt, and of courſe prevented the fever from ariſing to ſo great a height, as it would otherwiſe have done; and that thoſe are the beſt drinks, which are made up with ſome farinaceous ſubſtance, as they moſt readily unite with our fluids.

In the diſeaſes of hot climates, the ſtomach is ſo irritable, and there is ſo much tendency to regurgitation of bile, and conſtant vomiting, that hardly any thing will remain upon it. While I was at Antigua about twelve years ago, there was a practice at the hoſpital there, of very great uſe in the remittent fever, to ſtop the vomiting and ſtrengthen the bowels; this was by a drink compoſed of a log of quaſſia wood, put whole into a paleful of water, and left in it, which imparted a pleaſant and colourleſs bitter to the water, and was allowed to all the ſick indiſcriminately to drink cold, in as large quantities as they choſe. This remained upon the ſtomach when neither the bark, nor any other medicine, which contained the ſmalleſt ſolid ſubſtance, could be retained there.

In the NERVOUS and PUTRID FEVER, they ſhould throughout, be uſed of a more cordial and ſtimulating kind; and if poſſible containing a portion of nutriment.

Dr. Huxham ſays that in the nervous fever, the patient ſhould drink frequently: though ſuch quantities may not be neceſſary as in the ardent or even the putrid malignant fevers, yet they ſhould be ſufficient to carry on the work of dilution, ſupport the ſweats, and ſupply the blood with freſh and wholeſome fluids, in place of that noxious matter, which is continually paſſing off: with this view alſo, thin chicken broth is of ſervice, both as food and phyſic, eſpecially towards the decline of the diſeaſe; for the ſame reaſon, thin jellies of hartſhorn, ſago and panada are uſeful, with the addition of a little wine, and of the juice of Seville orange, or lemon.

The treatment of all the different kinds of INFLAMMATORY DISEASES, is ſo ſimilar, that for the application of diluents, a diſcrimination of them is unneceſſary.

In theſe diſeaſes, and in fevers, the ancients tortured their patients with the refuſal of drink, during the firſt ſtages; from a ſuppoſition that ſuch treatment would weaken the patient, and reduce the ſtrength of the diſeaſe; and from a perſuaſion, that after abſtinence, the application of diluents would have a fuller effect in procuring ſleep and perſpiration. Some of them were afraid that drink would weaken the remedies they made uſe of to ſubdue the diſeaſe, of which the thirſt was only a ſymptom. However later experience inclines us to believe, that diluents will not weaken, but rather aſſiſt the operation of other remedies; and that we had better attempt to allay irritation, and ſubdue inordinate action in the ſyſtem, than to weaken the ſtrength of the body; for theſe purpoſes, dilution becomes a very material part of the *antiphlogiſtic regimen.*

In ERUPTIVE FEVERS, they are uſeful in the beginning, to abate febrile commotion; in the progreſs, to maturate and fill the eruption; as well as in the decline, to obviate putreſcency, and carry off contagious matters from the habit; we therefore find it in this country, a very common practice to ſupply the patient freely with milk pottage, to help to fill the eruption of the ſmall pox. Baron Dimſdale recommends patients to drink cold water after inoculation, till the eruption is completed; and ſays, when he has perſuaded his patients to riſe from their bed and go abroad (though ſometimes led by aſſiſtants), and has allowed them to drink as much cold water as they choſe, they have not ſuffered the leaſt unfavourable accident; on the contrary, they had every favourable ſymptom; but frequently at the beginning of the diſeaſe, there was a raſh or effloreſcence upon the ſkin, that accompanied the variolous eruption; in that caſe, the patient was ordered to refrain from cold water, or any other thing cold.

In HÆMORRHAGES a draught of cold water is frequently taken to reſtrain them. Hoffman and other phyſicians recommend cold drink in menorrhagia. It is more requiſite when the body is much heated, as in uterine hæmorrhages attending labour, where it has a ſimilar effect to cold externally applied: in theſe caſes the hæmorrhages are ſo ſudden and violent, that a glaſsful of cold water drank, will produce as immediate an effect, and will be of as much ſervice as any internal medicine whatever. It will alſo operate in giving diſtenſion to the veſſels again, which after the ceſſation of the hæmorrhage may in ſome caſes be neceſſary; but with this view, diluents require a cautious uſe, for hæmorrhages are frequently renewed by their continuation.

In FLUXES and SEROUS DISCHARGES they are uſed, not only to ſupply the waſte of fluids; but alſo to waſh off any irritating ſubſtance, that may exiſt in the liquor ſecreted, or ariſe from its retention.

In the CATARRH it is obſerved by Dr. Cullen, that when moderate, it is commonly ſufficient for a cure, to avoid cold, or to abſtain from animal food for ſome days; or perhaps for the ſame time, to lie a-bed, and take often, ſome mild and diluent drink a little warmed, to promote a gentle ſweat; and after this, to take care to return very gradually to the uſe of the free air.

In DYSENTERY the thirſt and fever will demand diluents; which likewiſe will thin acrimonious matters in the inteſtines; but they ſhould be of a mucilaginous kind, and given cold, as the bowels are ſo irritable, and the periſtaltic motion ſo much increaſed, that frequently the mildeſt diluent, eſpecially when warm, will excite pain and evacuation.

They are ſeldom recommended in NERVOUS diſeaſes, from their tendency to diminiſh the vital power; unleſs when they are very ſtimulant and nutritious, ſuch as the uſe of wine.

IN the HYPOCHONDRIAC diſeaſe; in all caſes of bad digeſtion; and in weak and delicate ſtomachs; much liquid is not to be uſed, for the quantity is prejudicial as well as the quality. A large quantity increaſes the weakneſs of the ſtomach, by over-diſtending it, and hurrying away its contents. Reſpecting the quality, tea and coffee, from being ſedative drinks, ſhould be uſed with great caution. Alſo the leſs, that the ſtomach is accuſtomed to ſtimulus, from the ſtrength of the drink, the better; therefore fermented and vinous liquors, as containing a proportionate quantity of ſpirit, are to be uſed with moderation; but if their flatulency and acidity be not troubleſome, the quantity of ſpirit they contain, being proportionably ſmall, and enveloped in a mucilage, renders them leſs detrimental to the conſtitution, than the uſe of ardent ſpirits, however much diluted; for this laſt, by a conſtant uſe, weakens the ſtomach; and generally, in caſes of bad digeſtion, the patient by receiving a temporary relief from them, is betrayed into the renewal of their uſe, till a habit is acquired, and the diſeaſe much ſtrengthened. Aceſcent liquors, and thoſe which run readily into the acetous fermentation, as well as fermenting and flatulent drinks, generally diſagree with weak ſtomachs, and aggravate theſe diſeaſes. There are ſome caſes, in which a little brandy, or other ſpirit, may be added to water for drink; but when water itſelf can be brought into uſe, we ſhould eſteem it as a valuable gift; for as a conſtant drink, it is beſt calculated to preſerve an equal flow of animal ſpirits, and the due performance of digeſtion, on which depend, our health, comfort, and longevity.

In ASTHMA, and difficult breathing, a thin cool diet, and water, or cool watery liquors, are the only ſafe and proper drinks; fermented and flatulent liquors are hurtful, or any warm and tepid drink, ſuch as tea and coffee, will increaſe the aſthma, as well as weaken the ſtomach.

HYDROPHOBIA and CANINE MADNESS by Boerhaave, and other phyſicians, have been thought to ariſe from the want of water, exceſs of heat, and much animal food. The dread of water, which is the principal diſtinguiſhing ſymptom of canine madneſs, is ſaid to be peculiar to the human race; and that ſome patients by reſolution have conquered the dread, but never the convulſive ſtruggles, that follow the contact of fluids; which moſt probably ariſe from exceſſive thirſt, with a peculiar ſenſibility of the nerves, exciting ſpaſmodic affections of the throat, &c. with ſo much violence, as to reſiſt the patient's effort to ſwallow. Drinking ſea water, and a ſweating courſe with diluents, have been equally unſucceſsful with all the other modes of treatment; and nothing yet tried, can with certainty be ſaid, either to prevent, or cure the diſeaſe, unleſs it be exciſion, or deſtroying the wound where the poiſon was received.

Diluents are preſcribed in ſome of the diſeaſes ariſing from DEPRAVED HABIT.

When CORPULENCY becomes a diſeaſe, a thin, watery, and ſpare diet, will be the means of reducing the body.

The uſe of ſalted meats and drinking freely of coffee, are likewiſe recommended for this purpoſe. Dr. Fothergill ſays, that a ſtrict adherence to vegetable diet, is more effectual than any other means.

The famous Dr. Cheyne, who had exceſſive bad health when a young man, grew to ſuch an enormous ſize, as to weigh thirty-two ſtone, and was obliged to have the whole ſide of his chariot made open to receive him; but by a milk and vegetable diet, he reduced himſelf a third, afterwards enjoyed good health, and died at ſeventy-ſeven years of age. A ſimilar caſe is related by Sir George Baker, Bart. in the Medical Tranſactions, of Mr. Wood, who reduced himſelf ten ſtone weight, by farinaceous diet, with pure water for drink; and from a peculiarity of his conſtitution, a ſmall quantity of drink agreed beſt with him; but if the object is to reduce the body, much watery liquid is attended moſt certainly with that effect.

In the SCROPHULA, or King's evil, mineral waters are much drank, and ſea water is uſed internally as well as externally; their efficacy requires hardly any other proof, than an attention to the great reſort of company to watering-places; for at no former time were theſe places in ſuch great eſtimation as at preſent in this country.

The MINERAL WATERS have certainly acquired great medical reputation, from their containing various active ſubſtances. They are ſtimulant and antiſeptic, from their aerial acid; they alter the habit and ſtate of the blood, by their hepatic air; they promote the evacuations, by their ſaline contents; and they ſtrengthen the body, by the tonic and aſtringent virtues of their metallic impregnations; but then theſe ſubſtances are in ſuch a diluted ſtate, that the waters muſt be as uſeful from their bulk, as from any ſpecific virtue contained in them; becauſe we cannot obtain the ſame good effects, from a much larger doſe of the medicating or metallic part by itſelf. And notwithſtanding the prejudices of mankind in favour of natural productions, yet the native mineral waters are of no more uſe in medicine, than the ſame ſubſtances diſſolved in a large quantity of common water; for artificial mineral waters are of equal importance, or perhaps ſuperior, to thoſe found in the earth, by their not being made to contain gypſum, or earthy ſubſtances, which are at leaſt uſeleſs, and may be hurtful to the ſtomach.

Dr. Cullen, in treating of Scrophula, ſays, " With regard to the choice of " mineral waters moſt fit for the purpoſe, I cannot with any confidence " give an opinion. Almoſt all kinds of " mineral waters, whether chalybeate, " ſulphureous, or ſaline, have been employed

" ployed for the cure of ſcrophula, and
" ſeemingly with equal ſucceſs and re-
" putation; a circumſtance which leads
" me to think, that if they are ever ſuc-
" ceſsful, it is the elementary water,
" that is the chief part of the remedy."

The operation of the *ſimple watery menſtruum*, has been already ſhewn to be very powerful, on every part of the ſyſtem; and likewiſe very ſalutary, when uſed with propriety and moderation; to this we will impute the greateſt virtue of mineral waters, for the ſtimulating power of the impregnation that they contain, is diminiſhed by dilution, and rendered leſs effective upon the living fibre, ſince a doſe of any poiſonous drug, will proportionably loſe the deleterious quality it poſſeſſed, by much dilution; the general principle, therefore, which renders mineral waters efficacious, is their quantity of liquid, uniformly, and conſtantly pervading every part of the ſyſtem, producing ſlow and gradual changes; and when a medical virtue is ſuperadded to the effects of a large quantity of common water conſtantly applied (ſuch as the contents of the Cheltenham waters, which gently evacuate excrementitious matters, at the ſame time create an appetite), their virtue in altering the habit of body muſt be very great*.

The SEA WATER is alſo in great eſtimation for ſcrophula, as well as for cutaneous diſeaſes; the good effects are not ſo much from the ſtimulus, and evacuation it produces, (which is common to other remedies) as from its attenuating quality; for this reaſon many people mix a large proportion of freſh water with it, to render its effects more beneficial.

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* Dr. Percival, in his Eſſay on Water, ſays, "I "have reaſon to imagine, that the common ſwellings "of the lymphatic glands, owe their diſeaſed ſtate to "the water which the patient drinks. In theſe caſes, "as well as in many chronic pains of the ſtomach and "bowels, a courſe of diſtilled water might be as bene-"ficial as the moſt celebrated mineral waters are in "many other diſorders, and might prove no inconſider-"able addition to the materia medica."

It is more heating and ſtimulating, than any other waters; therefore is uſed as a diſcutient externally for indolent tumors, and is leſs proper for inflammatory habits.

The beſt regulation for the uſe of it, will be, to procure it as far from the ſhore as poſſible, within an hour of high water, and at a diſtance from the mouth of any river; then it ſhould be mixed with an equal quantity of freſh water, which will prevent its producing ſo much thirſt, render it more palatable, and keep it within the bounds of a moderate evacuation. When the patient cannot go to the ſea, we can make it artificially, by mixing half an ounce of common, with ſix drachms of Epſom, ſalt, and diſſolving them in a pint and a half of common water.

In the VENEREAL DISEASE, the uſe of mercury will be rendered much ſafer, and be much aſſiſted, by the free uſe of dilution: decoctions of guaiacum, tend, not only to circulate the mercury through the ſyſtem, and open the excretories; but perhaps alſo, it has a ſpecific virtue in the cure of the diſeaſe. The diet of the Lock Hoſpital is dilution, for the patients are allowed only, water gruel and bread, for the firſt two or three weeks that they are under the cure of any venereal complaint.

In the JAUNDICE, and bilious diſeaſes, they will open the excretories for the evacuation of bile; and as all the ſecretions are increaſed, and rendered more fluid by dilution, the flow of hepatic bile will be more free, and regular, into the inteſtines; therefore the blood will be leſs impregnated by it; likewiſe, ſtones and obſtructions removed from the channels of the biliary evacuation, by the uſe of liquids.

In LOCAL DISEASES, diluents act not only, as a general alterant of the ſyſtem, and thus ultimately produce their effect on a particular part, but are alſo often uſed, with an intention of acting immediately on the part affected; as in the *gonorrhœa*, where they become a material part of the cure, by preventing the irritation of the urine, and promoting a free diſcharge of mucus. Alſo, in moſt *diſeaſes* of the *bladder* they are uſeful, as acting quickly on the urinary paſſage; perhaps the many ſuppoſed *ſolvents* have no other virtue, than as mucilaginous diluents. It is upon the diluting principle, that the Malvern waters have been ſo celebrated, as powerfully *ſolvent* of the *human calculus*; Dr. Percival propoſes diſtilled water, as a ſubſtitute to produce the ſame effect. I have ſeen them of ſervice in *ſuppreſſion* and *obſtructions* of *urine*, contrary to the received opinion, that they always aggravate theſe diſeaſes *. In *uterine obſtructions*,

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* This obſervation is applicable, particularly to ſpaſmodic

ſtructions, or *ſuppreſſion* of the *uſual diſcharges*, on many occaſions, they may be managed, ſo as to be rendered ſerviceable in promoting them. And plentiful dilution is the principal remedy againſt the *ſtrangury*, or effects of cantharides upon the urinary organs.

Diluents are of great ſervice in reſolving indolent *tumours*, and *ſchirroſities*. The uſe of the ſarſaparilla decoction with mezereon, has often been attended with ſucceſs in ſchirrous tumours; particularly, when conjoined with ſmall doſes of antimony, or mercury. The late M. Pouteau, doctor of medicine, and chief ſurgeon to the Hotel Dieu at Lyons (whoſe poſthumous works have been publiſhed under the patronage of

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modic ſuppreſſions, and when joined with the uſe of the warm bath; becauſe, when obſtructions ariſe, from a diſeaſed ſtructure of the paſſages leading from the bladder, diluents may aggravate the diſeaſe; for frequently, by the bladder receiving a larger quantity of urine, it will endeavour to expel it faſter, and more forcibly, than the paſſages are capable of admitting.

the Royal Society at Paris), recommended the drinking of frozen, or cold water, as a cure for ſchirrous and cancerous tumours, without allowing any other aliment or medicine for ſeveral weeks; and relates a caſe of Madame Girard obtaining a cure of a ſchirrous womb, particularly by this means, after all other reſources had failed *. He adviſes the extirpation of any external cancer, although it ſhould be attended with a cancerous diſpoſition of the internal viſcera, from being of opinion, that the internal malady will give way to this treatment †.

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* "Ces accidens ne cederent qu'à un uſage abondant d'eau froide, tant en boiſſon qu'en lavemens"—"qu'il ſe fit chez Mde. Girard par le moyen de l'eau à la glace, un vrai travail, critique, & que la criſe fut determinée du côté des ſelles."

† L'operation faite, la maladie ſera miſe à l'eau à la glace ou à l'eau bien froide pour tout remede, & pour toute nourriture, & la quantité de la boiſſon ſera graduellement augmentée ſuivant la facilité qu'elle trouvera à paſſer par les urines.—Œuvres poſthumes de M. Pouteau, tome premier.

In CUTANEOUS DISEASES, decoctions of ſarſaparilla, &c. are preſcribed, under the common appellation of ſweeteners of the blood. The ſarſa root taken in ſubſtance, is a very inert medicine; notwithſtanding the ſmall quantity that the decoction contains of it, yet very great benefit is often derived in practice, from its uſe, which muſt principally ariſe from its being a mucilaginous diluent. I believe, that many more of theſe decoctions have few other virtues than as diluents, otherwiſe, why do we uſe them in ſuch large quantities, when a much ſmaller portion of fluid would be more grateful, and might be as much impregnated with the virtues of the drug?

The Indians are famous for cures per-

Mr. Pearſon, ſurgeon to the Lock Hoſpital, informed me, that he had lately a caſe of ſchirrous uterus, and tried the watery diet as propoſed by Pouteau; where he allowed the patient only water, tea and bread; by which means ſhe recovered in the ſpace of two months.

formed by decoctions of ſundry herbs; the greateſt virtue of them, is to be aſcribed to dilution, aſſiſted by impreſſion on the imagination; or they may have gained the credit of a cure, in a manner ſimilar to the reputation acquired by many other inert medicines, viz. from diſeaſes wearing themſelves out, during their uſe; or perhaps they were the laſt remedies in uſe when the patient recovered.

Diluents are CONTRA-INDICATED in all debilitated habits, and where there is a lax fibre; or when from low or bad living, the blood is thin and poor; or when the action of the heart is very weak, they will in ſuch caſes aſſiſt in producing hydropic effuſions; they ſhould therefore be cautiouſly uſed, in nervous diſeaſes, hæmorrhages and dropſies; when they are uſed in either of the two firſt diſeaſes, they will be much ſafer cold than warm.

They are rendered more or leſs detrimental in particular ſituations.

A greater quantity of liquids may be uſed in hot, than in cold weather, as they paſs off again by the perſpiration, as well as by the urine; it is for this reaſon, that they are in ſuch frequent uſe abroad, and preſcribed ſo freely in warm climates.

People who uſe a great deal of exerciſe, or have a ſtrong muſcular fibre, will be enabled to drink much larger quantities of liquids, with leſs riſk of dropſy, than thoſe who are indolent, or have a weak fibre, and diminiſhed energy of the heart. I think that the inhabitants of London in general, are more liable to diſeaſes from lax ſolids, than thoſe of any other country (marſhy ſituations excepted), and can with leſs ſafety bear the evacuation of bleeding; conſequently, if this obſervation is juſt, the continued uſe of much dilution, ſhould not be practiſed by them, unleſs when it becomes neceſſary for the removal of ſome diſeaſe.

There are ſome caſes, wherein we have emptied the veſſels by evacuation, where a free uſe of diluents might fill them again, and prevent the evacuation proving ſo uſeful as it would otherwiſe be. There are other caſes, where we want to take a diagnoſis from the urine, in which quantities of liquids drank, will diſturb it, and prevent our obtaining the neceſſary information; but theſe are rare, and at leaſt but ſecondary conſiderations.

I ſhall make ſome obſervations on two diſeaſes, wherein diluents have been thought prejudicial.

In DROPSY, till lately in this country, they have been univerſally condemned; and caſes are related of cures performed by total abſtinence from drink; but it is ſo little in our power to reſiſt the appetite of thirſt in any extreme, that theſe caſes of abſtinence are much rarer than ſuppoſed. On the contrary, their uſe is now recommended, as being neceſſary for the operation of diuretics, and cure of the diſeaſe; the propriety of the practice has been not only ably ſupported, but caſes are related of its ſucceſs *.

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* Several foreign phyſicians have uſed drink, to aſſiſt their remedies in the cure of dropſy for a length of time. The reputation of Bacher for the cure of the diſeaſe was ſo great, that the French King paid a large ſum of money for his ſecret; the baſis of which was black hellebore, with dilution. Sir George Baker, Bart. has publiſhed ſome caſes in the London Medical Tranſactions, where the patients were recovered from the moſt dangerous ſtate, by a quantity of diluting drink. Dr. Milman, who has managed this ſubject in a maſterly manner, draws the concluſion, "that to irritate the body by medicines, and to prohibit drink at the ſame time, is not leſs repugnant to the laws of Hippocrates, than prejudicial to the patient; and that thoſe medicines are fruitleſs without drink, which with its aſſiſtance often ſucceed very happily." Dr. Home of Edinburgh, has likewiſe publiſhed twenty experiments, which confirm the ſame opinion.

If a derivation of fluids can be procured from the cavities, by forcing the kidneys with diuretics, and diluents, their uſe may be continued, to ſupport the evacuation. The ſafeſt rule for that purpoſe will be, to adjuſt the proportion between the quantity of urine evacuated, and drink taken in; and when the ſecretions in general, balance the quantity of drink, we certainly are ſafe in its uſe.

I think that they may alſo be rendered ſerviceable in DIABETES, which is a diſeaſe analogous to dropſy, in the little power we have at times over the ſtate of the ſkin, and kidneys. It is a law in the conſtitution, when a great evacuation of any fluid takes place in the body, all the other fluids are determined to that place. As in this diſeaſe, there is a determination from the reſt of the ſyſtem, to the kidneys, and the ſkin is in an abſorbing ſtate; if we can produce a determination from the kidneys, to the ſkin, by diluents, co-operating with the ordinary remedies, diaphoretics, warm bathing, flannel, and friction, we ſhall be likely to produce a cure: perhaps alſo, diluents may aſſiſt the aſſimilation of the aliment, and remove the ſenſe of the heat, felt at the ſtomach in diabetes. The moſt favourite remedies countenance theſe opinions, for alum whey, and lime water, muſt have other effects, than merely their aſtringency on the kidneys. I am informed by a phyſician of extenſive practice in this metropolis, that diluents are of more ſervice in this diſeaſe, than any other remedy; for that reaſon, he directs his patients in theſe caſes, to uſe the Briſtol waters.

At the ſame time, by an injudicious uſe, diluents may be made to aggravate any diſeaſe, particularly the dropſy and diabetes; which can be no objection to their moderate and well-timed application (otherwiſe we might reject aliments becauſe ſome are gluttons), but ſhould only make us the more attentive, to the nature of their operation, the diſeaſe, and the conſtitution of the patient.

CHAP. III.

THE DIFFERENT KINDS AND QUANTITIES OF DILUENTS.

VARIOUS kinds of diluents have been uſed in the healing art, from its earlieſt period, to the preſent day, but not any one held in ſuch general eſteem, as *barley water*, which ever ſince the time of Hippocrates, has been a ſtandard drink in acute diſeaſes.

From the writings of the ANCIENTS, we can obtain little ſatisfactory information reſpecting dilution, owing to the idea they entertained of its operation; but however erroneous their reaſoning may be, their facts demand our attention; from their having been accurate obſervers of nature, their authority has been held ſacred, during the great progreſs of medical ſcience in ſucceeding ages.

HIPPOCRATES may very well be called the founder of phyſic, for before his time, it was little elſe, than a heap of abſurd ſuperſtitions, when heroes and prieſts were phyſicians. But from his paying ſo much attention, to the minute ſymptoms of diſeaſes, and every accident attending their acceſs, progreſs, and decline, joined with an extenſive practice, he was enabled to make a complete hiſtory of them; and by compariſon in a variety of caſes, to form ſuch exact prognoſtics, and judgment of events, as by many to be eſteemed a prophet.

The books aſcribed to this great man, are numerous, among which, there are ſeveral written on diet and drink; ſubjects which attracted his attention more than all others, from his reckoning alterations in the diet and air, to be the moſt prevalent cauſes of diſeaſes; this made him exceedingly cautious in the choice of theſe, and his practice to turn almoſt wholly on that opinion; it was ſo much his wiſh to be reckoned the author of dietetics, that he ſaid, the ancients had wrote almoſt nothing concerning the diet of the ſick, although it was one of the moſt eſſential parts of the art. He took a good deal of pains to diſtinguiſh between good and bad waters; and ſaid, that the beſt were clear, light, without ſmell, and taken from fountains that face the eaſt.

In acute diſeaſes, he preferred liquid diet to ſolid; and this was generally a broth made of prepared barley, ſimilar to our barley water, which he called PTISAN; a name, which was common at that time, to both the grain and the liquid made from it. There were a great many different kinds of ptiſans, ſuch as of lentils, rice, wheat, millet, maize, &c.

but the ptiſan of barley, was called ſimply *ptiſan*, becauſe of its preference, and the great eſteem it was held in: to this he uſed to add occaſionally, a little vinegar, leeks, or aniſeed, eſpecially for women after lying-in, to obviate diſeaſes of the bowels. The ptiſan was uſed in preference to any other thing in fevers, becauſe he ſaid, it moiſtened, and ſoftened very much, was eaſy of digeſtion, produced no thirſt, waſhed away what was unneceſſary, and kept the body gently open; the barley having ſwelled as much as poſſible in boiling, it would not produce diſtenſion of the abdomen, whilſt its ſlipperineſs prevented its adheſion; this he ordered to be uſed twice a day for diet, eſpecially to thoſe patients who were accuſtomed to two meals in health, and only once a day, to thoſe who were uſed to one only; he leſſened the quantity of barley as the fever grew more violent, till there was very little farina in it; and ſaid, that in pleuriſy, if it was not very much diluted, the fate of the patient would be haſtened by it. He not only uſed a thin moiſtening diet, but alſo thin drinks, in diſeaſes, ſuch as the cream of the ptiſan, ſometimes water, but more frequently uſed, eight parts of water to one of honey, with a little ſweet wine (which was called aqua mulſa), and ſometimes added a little vinegar to it. He frequently allowed wine in fevers, eſpecially the white wines, which he ſaid, were beſt for promoting a flow of urine, and ſhould be mixed with an equal quantity of water; for the wine would expel what was hurtful to the body, and the water ſerve to temper the acrimony of the humours; but if a violent head-ach or delirium ſupervened, wine ſhould be laid aſide, and water ſubſtituted in its room, or at moſt, a watery ſort of white wine, obſerving to give ſome water after it*. In chronic diſeaſes, milk and wine, were his favourite remedies.

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* "In febre bilioſa quæ hominem quotidie corripit, et

ASCLEPIADES was the leader of a ſect, in oppoſition to the doctrines of Hippocrates; and ſaid, that Hippocrates and his followers, by depending on nature, attended their patients rather to obſerve in what manner they died, than to cure them.

He acquired great fame for the cure of diſeaſes, by cold water and wine; but never ſpared his patients any kind of torture; ſtriving to diminiſh their ſtrength, by watching and thirſt, not allowing them even to cool their mouth, with a drop of liquid, for ſome time after the appearance of the diſeaſe; but when the violence of the fever was abated, he allowed them to drink, and to have their beds made ſoft, then ordered wine, or other aliment, but this

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os amarum jungitur, et vomitio juncta, et ad lumbos, cruraque gravitas, ea die qua febris detinet, quantum quis bibere volet, aquam frigidam ſumere oportet."—Hippocrates, lib. ii. de Morb. § 36.

was frequently not before the ſeventh day.

CELSUS is juſtly called the Roman Hippocrates, for he ſupported, and elucidated his doctrines, in oppoſition to the innovators of theſe times; yet he ſhewed a great inferiority of ſkill, by differing from him in the uſe of drink in fevers.

He was of opinion, that in the beginning of diſeaſes, patients ſhould be made to endure hunger, and thirſt, but afterwards to be nouriſhed with good aliments, and ſaid, that in fevers, the attention ſhould not be directed to the ſymptom, thirſt, but to the diſeaſe which produced it, and after that was ſubdued, the thirſt would naturally ceaſe; therefore, the patient ſhould be prohibited the uſe of drink, during the whole fever*, at leaſt, to be allowed it in a very ſmall quantity, that the efficacy of the remedies uſed againſt the diſeaſe, might not be diminiſhed by dilution. He was not ſo rigid in the refuſal of drink, as ſome of his cotemporaries, but when he indulged in its uſe, it was not to be on the firſt day, unleſs the pulſe became moderate, and food could be taken at the ſame time; he choſe rather to cheat the thirſt, by liquids applied to the mouth, than by the uſe of drink.—He ſpeaks in favour of cold liquids, and adviſes a great quantity of cold water to be given, even, in the greateſt increaſe of an ardent fever, to abate it, and to be vomited again*; but gives cautions againſt the uſe

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* De potione, vero ingens pugna eſt, eoque magis, quo major febris eſt, hæc enim ſitim accendit, et tum maxime

maxime aquam exigit, cum illa periculoſiſſima eſt, ſed docendus eſt æger, ubi febris conquieverit, protinus ſitim quoque quieturam; longioremque acceſſionem fore, ſi quod ei datum, fuerit alimentum; ita celerius eum deſinere ſitire, qui non bibit.—Celſ. lib. iii. cap. 6.

* "In ſummo incremento morbus eſt, utique non ante diem quartam, magna ſiti accedente, frigida aqua copioſe

uſe of it, when the patient is ſweating from hard labour; or, when he is travelling; he follows Hippocrates in the uſe of the ptiſan in acute diſeaſes.

GALEN was ſo much a follower of the doctrines of Hippocrates, that he declares, none of his commentators underſtood his meaning, beſides himſelf.—Galen added a great deal of falſe reaſoning, to the practice of Hippocrates.

He denied patients drink in the firſt days of fevers, and ſpeaks in favour of

copioſe præſtanda eſt, et ad ſatietatem danda, qua pro medicamento utentur. Ubi factum eſt, multa veſte operiendus eſt, et collocandus, ut dormiat: fereque poſt longam ſitim et vigiliam, poſt multam ſatietatem, poſt infractum calorem, plenus ſomnus venit, per aquam ingens ſudor effunditur, idque præſentiſſimum auxilium eſt"— "ut bibat etiam ultra ſatietur; et cum jam venter et precordia, ultra modum repleta, ſatiſque refrigerata ſunt, vomere debet: quidam ne vomitum quidem exigunt, ſed ipſa aqua frigida, tantum ad ſatietatem data, pro medicamento utuntur."—Celſ. lib. iii. cap. 7.

cold water*; ſays, that he had frequently ſeen patients immediately freed from an ardent fever, by drinking cold liquids, but that this happened when the humours were moderately concocted, and therefore, at a time when the violence of fever was abating. He has written a book on the barley ptiſan, in the ſame language, as that of Hippocrates †.

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* In febribus potionem frigidam impenſe laudat; "quia extinguit febrem, et naturam robuſtam reddit, ut deinceps per alvum et ſudorem expellat, quæ noxia ſunt."—Galenus, Meth. Med. lib. ix. cap. 5.

† Dummodo eo uſus ſit, facile infernis elabitur, neque adſtringit, aut moleſte vellicat; nec dum in ventre eſt, in tumorem elevatur; quod vero ptiſana nil contineat glutinoſi, aut obſtructioni aptum (veluti univerſa cetera quæ lenta ſunt) perſpicuum eſt detergat namque non ſordem corporis ſolum, ſed et exhibita pituitoſum quemque in ventre humorem expurgat, ceterum flaccida moderate exiſtit, id eſt madida, ac ſitim abigens—ergo cum ſic ſe habeat, acutis febribus ad modum conveniens fuerit, nec ea tantum gratia, quod his indequaque repugnet; ſed quod e maxime concoctilibus ſit, ac in nulla non qualitate imbecillima, digeſtuque facilis, atque ob deterſivam vim, putridos ſuccos luſtret, ſemiputres autem concoquat.—Cl. Galen, de Ptiſan, liber.

VAN HELMONT, who boaſted of curing all fevers in a few days, ſaid, that in theſe caſes, he abhorred the idea of abſtinence from drink, that it deprived the patients of ſtrength and nouriſhment; and that they ſhould have liberty to drink when they pleaſed, without the leave of their phyſicians; who, had frequently been diſgraced, by the recovery of their patients, from breaking through their rules of abſtinence.

From the BOERHAAVIAN DOCTRINE, there aroſe a great reform in favour of the practice of diluents. Boerhaave oppoſed the ancients in the uſe of them cold, and recommended them to be adminiſtered, neither very cold, nor very warm, but nearly about the heat of the human body; for when they were in the extremes of heat or cold, they were attended with the ſame effect, of coagulating the blood.

He ſays, that the ſymptom of thirſt ought always to be immediately relieved, more eſpecially in acute diſeaſes; and affirms, that nothing is ſo great a diluter of thick blood, as warm water taken in large quantities; when thirſt was accompanied with great weakneſs, wine and ſpirits might be added to the drink.—In acute diſeaſes, he was partial to rice gruel, and barley water acidulated with fruits, as citrons, oranges, &c.

HOFFMAN's SYSTEM was alſo favourable to dilution *; and he ſays, that

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* Poſt ſanguinis miſſionem, omni ſtudio eo annitendum, ut igneus iſte totius corporis æſtus cum immodica ſiti et faucium arriditate, removeatur iis, quæ æſtuoſam illam partium ſulphurearum agitatione figunt et temperant, ac preterea fibrarum rigidum ſpaſmum laxant, et humores in vaſculis minimis ſtagnantes diluunt, fluxiles reddunt et obſtructa reſerant, ut æquabilis et liberior fiat per loca convenientia et vaſa tranſitus, nec immerito tam magnifice de frigidæ potu in ardentibus ſenſiſſe veteres, uberius teſtatur et ratio et experientia; niſi enim ventriculus, vel aliæ internæ partes jam vera inflam-

that fluids are neceſſary, not only, from the ſtructure of the body, and the nature of the blood, but alſo, that the moſt violent diſeaſes have been cured by the uſe of water. He recommends diluents impregnated with acids and nitre, as the principal remedies in fevers, eſpecially after bleeding; and ſays, if they were taken in ſufficient quantity, they would

inflammatione affectæ, nec ſumma cum externorum frigore anxietas, neque etiam pulſuum contractio et ſanguis deficiens adſit, utique aqua bonæ notæ ſubfrigida, non prorſus gelida, hauſtu non ſimul et ſemel, largiter tamen pota egregie prodeſt. Neque etiam a frigore noxa timenda, quia frigidum, ſucceſſivis hauſtibus, corpus ſubiens a calore interno tepeſcit, qui humidus tepor ad relaxandas ſpaſmo conſtrictas fibras et ſuccos in minimis ſtagnantes expediendos et fluxiles reddendos apprime proficuus, et hinc ſudor et urina copioſe fluant et alvus moveatur; ſed quum in ſeptentrionalibus noſtris regionibus admodum raræ leves ejuſmodi, puræ et ſubtiles aquæ reperiantur coctione et admixione congruorum corrigendæ utique, ipſe Hippocrates aquam cum hordea coctam, jam in ardentibus laudat, et Aretæus aquam cum lacte mixtam in cholera commendat.— Hoffman, tom. ii. de frigido potu in febre ardente.

abate heat, and thirſt, raiſe a ſweat, an procure ſleep.

All over the *Continent of Europe*, dilution is a very faſhionable practice; bu the SPANISH and ITALIAN phyſician carry it farther, than thoſe of any othe country.

Their DIÆTA AQUEA conſiſts, i avoiding every kind of diet or drink but ſimple water, which after diſeaſe have continued a week or longer, is t be adminiſtered to the amount of eigh or ten pounds, for ſeveral days ſucceſſively, in ſmall quantities at a time; thi they frequently preſcribe to be take warm, but more generally cold, and i hot weather, ſometimes to be cooled wit ice.

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The different kinds of medical diluents, now uſed in THIS COUNTRY, admit of much variety: and the greater choice there is of them, the better, for by that means, there is a greater opportunity of pleaſing the patient's taſte; we have it alſo more in our power to hit upon one, that will agree with the ſtomach: it is evident that ſome conſtitutions will reject drinks that are ſalutary to others, independent of the diſguſt, that is ever ready to be formed in the mind of the patient againſt particular things, and at no time more than in the valetudinary ſtate.

The moſt common drinks in acute diſeaſes, are, watery *infuſions of the Engliſh herbs*, making different kinds of teas; amongſt which, we generally find one that is grateful to the patient, ſome preferring ſage, others mint or balm; all which are nearly ſimilar in their virtue; the herbs impart an aromatic, and gently ſtimulating property to the water; and theſe teas will ſtay on the ſtomach when it rejects many other things. There are various other watery infuſions, under the name of teas, which are impregnations of active drugs, ſuch as ginger tea, horſe radiſh tea, &c.* The different kinds of theſe, it is totally unneceſſary to enumerate, and the uſe of them varies in every different county.

The farinaceous ſeeds of the graſſes, are mucilaginous, and eaſy of digeſtion, when the organs of the body are weak. For this reaſon *barley water* is very much uſed, although it is not made of ſuch thick conſiſtence, nor the barley eaten as food, in the manner of the ancients. The water, in which the barley is boiled, contains its fineſt flower, and is uſed as a mild cooling and laxative drink; without ſtimulating, it has a ſufficiency of nutriment to ſupport the powers of life; frequently, a little lemon juice is added, to render it, in particular caſes, more uſeful and palatable.

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* The horſe radiſh may be infuſed, to about half an ounce or more, in a pint of water, and drank every day, as an exceeding good remedy for amenorrhœa or dropſy.

Water gruel is a drink ſimilar to barley water *; but as oatmeal is more nutritious than barley, it is leſs fit for inflammatory diſeaſes, although the difference is ſo very ſmall, that patients need hardly be refuſed the choice of either, when the gruel is made thin.

Rice gruel is ſimilar to the two laſt, but rather more aſtringent; and therefore, more adapted to particular caſes.

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* To prepare gruel, the Scots oatmeal is preferable to what is made in this country: from its conſtituting a great part of the diet of the poor in Scotland, more pains are taken in preparing it; it is generally better dried, and the huſks not ground down in it.

When the ſtomach is very irritable, a drink made with *cold water and toaſted, or burnt bread*, will remain beſt upon it; and very frequently will check vomiting. Toaſt and water is a drink, that is, not only very uſeful, but very much longed for, by patients in febrile diſeaſes.

When a cordial and diaphoretic is to be uſed, *wine whey* is very ſuitable; and may be made of any ſtrength proportioned to the occaſion *.

When more nouriſhment is wanted,

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* Wine whey is generally made with about two gills of wine, added to two pints of milk and one of water boiling, and then ſweetened; but the beſt method is to boil half a pint of milk, then add a gill of wine, ſeparate the curd, and lower the whey with water according to the ſtate of the patient, and afterwards ſweeten it with ſugar.

beef tea, and thin broths are very uſeful, in the form of drink; they require little digeſtion, and are in many caſes more pleaſant, and convenient to the patient, than thicker diet.

Acidulated drinks, ſuch as lemonade and orangeat, are very uſeful in inflammatory and putrid diſeaſes *. The acids are a very great addition to the virtue of drink, as they quench thirſt, and greatly promote urine and perſpiration. Frequently, the addition of wine to acidulated liquors, ſuch as the Weſt Indians call *ſangree*, renders them better adapted to putrid diſeaſes. I have frequently given patients *cyder* to drink freely, in putrid fevers, and however it might at other times have diſagreed with their bowels, I never found it hurtful in theſe ſituations.

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* Lemonade is made by mixing a ſmall piece of the outer rind, and the juice of one lemon, with a pint and a half of boiling water, then adding about two ounces of ſugar.—Orangeat is made in the ſame manner, only uſing the juice of two oranges inſtead of the juice of a lemon.

Imperial drink has been a long time in uſe, and is deſervedly eſteemed a pleaſant, cooling, laxative and antiſeptic drink *.

Apple tea † or currant jelly mixed with water, make very convenient, and uſeful drinks; eſpecially for children.

Drink made with *cream of tartar*, has

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* Imperial drink may be made with, two or three drachms of cream of tartar (or in its ſtead half a lemon), a ſmall bit of lemon peal, an ounce of honey or ſugar, and a quart of boiling water, mixed together and ſtrained.

† Apple tea is made, by pouring boiling water on ſlices of four apples, and afterwards ſweetening it with ſugar. For convenience, this may be drank from the ſpout of a ſmall tea pot; which practice is uſeful for children, becauſe in this manner you can give them what you pleaſe, without their being able to diſcover it, by ſight or ſmell.

been much extolled by Dr. Lind for diſeaſes of warm climates; on his authority, I have repeatedly uſed it in about an ounce, to a quart of water, and found it very ſerviceable as a laxative, diuretic and antiſeptic, and for removing bilious obſtructions. It is uſed by many in this country for common drink in the ſummer, to leſſen heat and fever.

In cold weather, when there is not a nurſe, nor fire in a ſick room, the drink may be put hot into a bottle, and taken into the bed, and kept under the clothes, which will prevent it from growing cold, and render it convenient for uſe.

The QUANTITY of diluents neceſſary in different caſes, will be greatly regulated by the degree of thirſt, the ſymptoms, and nature of the diſeaſe. In fevers and inflammations, where they are principally indicated, there is no occaſion for any other limitation, than to avoid giving them in ſuch quantities as, to over-diſtend the ſtomach, or produce vomiting, or purging unneceſſarily; and to be careful not to protract their uſe too long, or after the violence of fever is removed.

To aſſiſt the operation of an EMETIC, much ſmaller quantities of drink are now given, than formerly; I ſeldom for this purpoſe, order more than a quart or three pints of thin gruel, or warm water to be drank; as I obſerve when large draughts are taken, the ſtimulus of their bulk, forces them to be rejected, without having time to combine with the contents of the ſtomach; the patient in ſuch a caſe will vomit for hours together large portions of clear drink, while bile, and other morbid contents are left behind, which would have been thrown up, if a nauſea had been ſuffered to bring the ſtomach into action, without much drink. By adminiſtering ſuch moderate quantities, we ſhall alſo avoid the debility and danger, that ariſe from over-diſtending the ſtomach, as will be elucidated by the relation of a late unfortunate caſe.

Mr. Pettigrew, an officer of the tenth regiment, at Fort Auguſta near Kingſton in Jamaica, was naturally healthy and temperate; but having indulged in wine very freely, on the evening of laſt St. Andrew's day; he next morning about ten o'clock, took very large quantities of warm water to make him vomit; ſome gallons it was thought before the operation took place; but at length returning with a violent exertion, he ſaid, he felt ſomething give way within him; and he died in the night of the ſame day. Mr. Dryden, hoſpital mate, and ſeveral more of the faculty, who attended at the diſſection, found the œſophagus, and part of the ſtomach ruptured, and the liquor eſcaped into the thorax.

At the ſame time, it is neceſſary for the operation of a vomit, to drink a certain quantity, to prevent the too violent ſtraining, and exertion of that organ; chamomile tea drank warm, and returned again immediately, can have very little effect as a bitter; I therefore generally give the emetic ſufficiently ſtrong, to operate with gruel or barley water, which is infinitely more palatable, and makes an uſeful operation, a much leſs formidable one.

To aſſiſt PURGATIVES, the common mode ſeems very well adapted, the drinking of a baſon or two of thin broth, or gruel.—The patient's demand for drink, will depend on the briſkneſs of the cathartic, which ſhould be indulged, unleſs in hydropic caſes, where an abſtraction, or derivation of fluid is neceſſary; in theſe caſes, the leſs drink that is uſed with cathartics the better.

There are likewiſe ſome caſes, where the periſtaltic motion of the alimentary canal is inverted, or the ſtomach ſo irritable,

table, that it will not bear any liquid; then the more ſolid forms of medicine only, ſuch as pills, can be uſed, and that with as little drink as poſſible, to promote the determination downwards.

For the purpoſe of exciting a DIAPHORESIS, the medicines that are generally adminiſtered are of a ſtimulating nature; the uſe of which, will often be attended with an increaſe of heat and fever, unleſs they are aſſiſted with plentiful dilution; and with this aſſiſtance, any claſs of active remedies, either ſtimulating, relaxing, or nauſeating, will produce a perſpiration. In many caſes, dilution of itſelf is ſufficient for that purpoſe; nor is a free and repeated uſe of it, required at firſt, to force the extreme veſſels only, but likewiſe to ſupport a continuance of the evacuation; at the ſame time theſe ends will be further promoted, by external heat, and avoiding purgatives, or any thing that will determine the circulation to the internal parts.

I have now finiſhed explaining in as clear a manner as I could, the opinion of phyſicians, and that of my own, reſpecting a remedy, that I think of as much conſequence as any in the practice of phyſic: and if the peruſal of this treatiſe, ſhould be attended with no other advantage, than that of attracting the reader's attention to a ſubject of importance, I ſhall think my time and labour, have not been employed in vain.

FINIS.